THE CITY OF ASHEVILLE

City of Asheville

# Municipal Climate Action Plan

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# Executive Summary

In 2009, the City of Asheville adopted a Sustainability Management Plan (SMP). Sustainability recognizes that our health and well-being depend fundamentally on the natural environment — the air we breathe, the water we drink, the food we eat, and the weather we experience. [1] The SMP explained that, for Asheville, sustainability requires making decisions that balance environmental stewardship, social responsibility and economic vitality to ensure the well-being of our community, both today and for future generations.

The City has demonstrated a longstanding commitment to sustainability. Since the creation of the SMP, the City has adopted resolutions to reduce its carbon emissions; transition to renewable energy; reduce the City's solid waste tonnage, and promote environmentally-sound food production and consumption. In 2020, the City adopted a Climate Emergency resolution, which recognized the urgent need for action in light of climate change (see **Sustainability and Climate Progress**). This Municipal Climate Action Plan (MCAP) sets the roadmap for the City to continue to make sustainability and climate action progress within City operations.

The MCAP focuses on actions that mitigate or adapt to climate change for city operations. The development of the MCAP was led by the Sustainability Department in collaboration with multiple City departments, and the City's Sustainability Advisory Committee on Energy and the Environment (SACEE).

## THE MCAP RECOMMENDS THAT THE CITY PURSUE THREE OVERARCHING SUSTAINABILITY AND CLIMATE GOALS:

### Goal 1
**City-Owned Assets are Resilient, Sustainable, and Efficient**

### Goal 2
**Sustainability and Climate Priorities are Embedded In City Operations, Participation, and Decision Making**

### Goal 3
**The City Supports Sustainability and Resilience For Area Residents and Businesses**

## THE MCAP FURTHER RECOMMENDS THAT THE CITY FOCUS ON SPECIFIC AREAS WITHIN EACH OF THESE GOALS

**Focus Areas For Goal 1 (City Facilities) Include:**

◈ Use 100% Renewable Energy for City-Owned Facilities and Enhance Energy Efficiency for City-Owned Facilities

◈ Equip City Assets to Prevent, Withstand, and Recover From Disruptions

◈ Decarbonize Fleet Vehicles and Fleet Operations

**Focus Areas For Goal 2 (Staff Decision-Making and Operations) Include:**

◈ Embed Sustainability, Resilience, and Equity in Decision-Making and Planning

◈ Identify Opportunities to Reduce Waste Generation and Improve Diversion

**Focus Areas For Goal 3 (Support Community Sustainability and Resilience) Include:**

◈ Collaborate On and Support Community-Based Solutions and Infrastructure Improvements to Prevent, Withstand, and Recover From Disruptions

◈ Facilitate Inclusive Sustainability, Climate, and Resilience Communications, Education, and Outreach

# Executive Summary

Based on this goal/focus area framework, the MCAP recommends that the City undertake 22 "activities." These activities, summarized in **"Appendix A: Summary of Sustainability and Climate Activities"**, were prioritized based on high impact, feasibility and opportunity to advance equity. **"Appendix B: Other Potential Activities"** identifies other potential activities that were considered during the plan's development.

Of the 22 recommended activities, some involve a continuation and/or expansion of existing City policies and programs. These include:

- Solar panel installation on municipal properties
- Stormwater control measures on municipal properties with special emphasis on "Green" infrastructure
- Use of the Climate Justice Tools
- Staff engagement on State and public utility policies
- Food production and community gardening programs

Other activities are new and will require development of plans and programs to implement new policies. These new activities are identified within **"TABLE 1: ACTIVITY TYPES"**. Examples include:

- Adopting energy efficiency standards for building retrofits and upgrades
- Evaluating and improving the efficiency of the municipal water distribution system
- Implementing a transportation fleet electrification pilot program
- Implementing urban forest practices on City land in neighborhoods with low tree coverage

The MCAP recognizes that other City priorities and budget constraints make it impractical to pursue all twenty-two activities immediately and simultaneously. **Table 2** outlines a proposed timeline for sequencing the activities. The City will revisit the sequencing and timeline as new information, resources, or priorities emerge and adjust accordingly.

It bears emphasis that an activity should not be neglected solely because it initially may require longer-term planning and development. Without the requisite initial investment, the City will be unprepared to implement the activity when needed, and will lose the activity's contribution to fulfillment of the City's sustainability and climate goals. By addressing resource gaps and implementing the MCAP activities, the City can advance these goals.
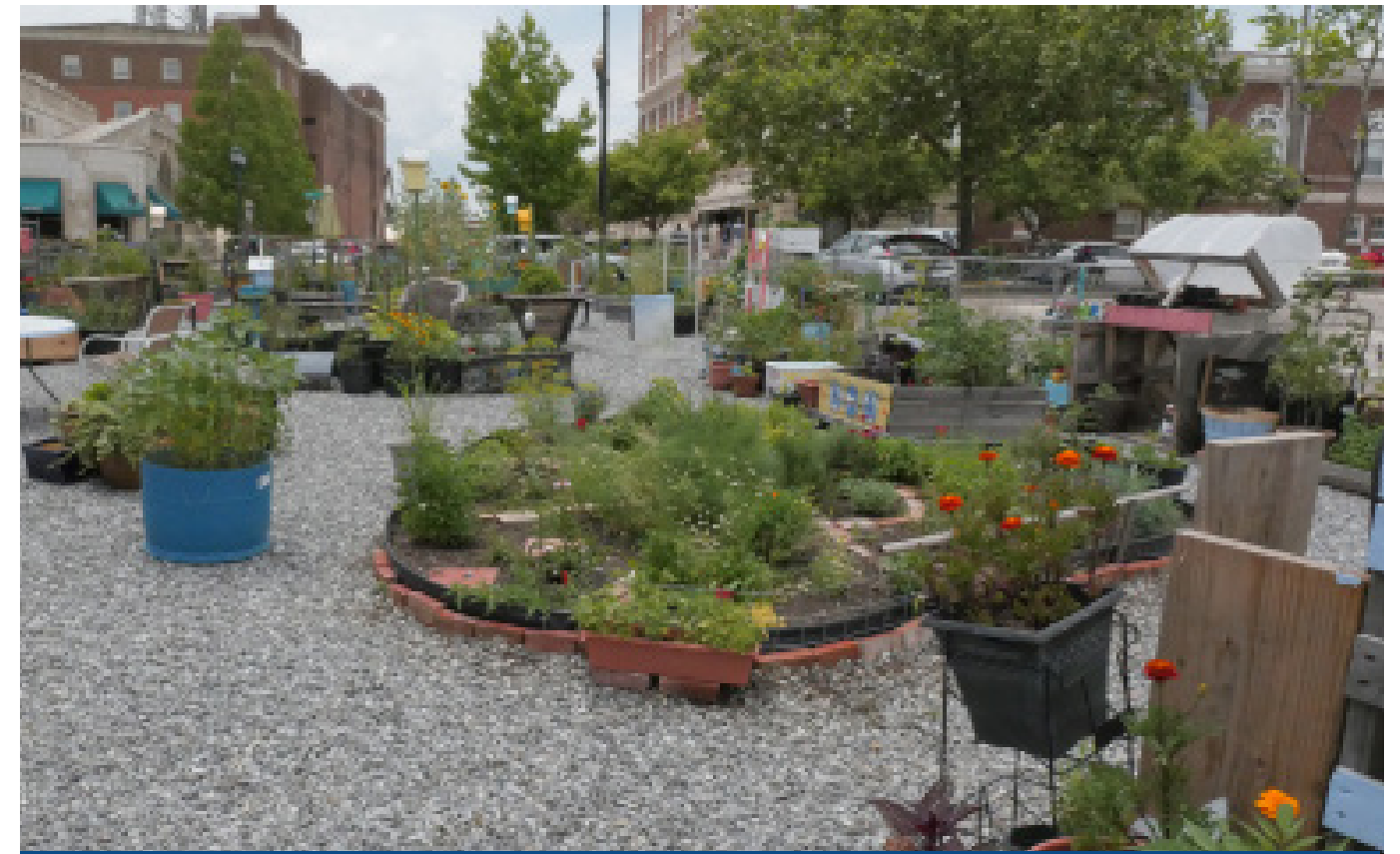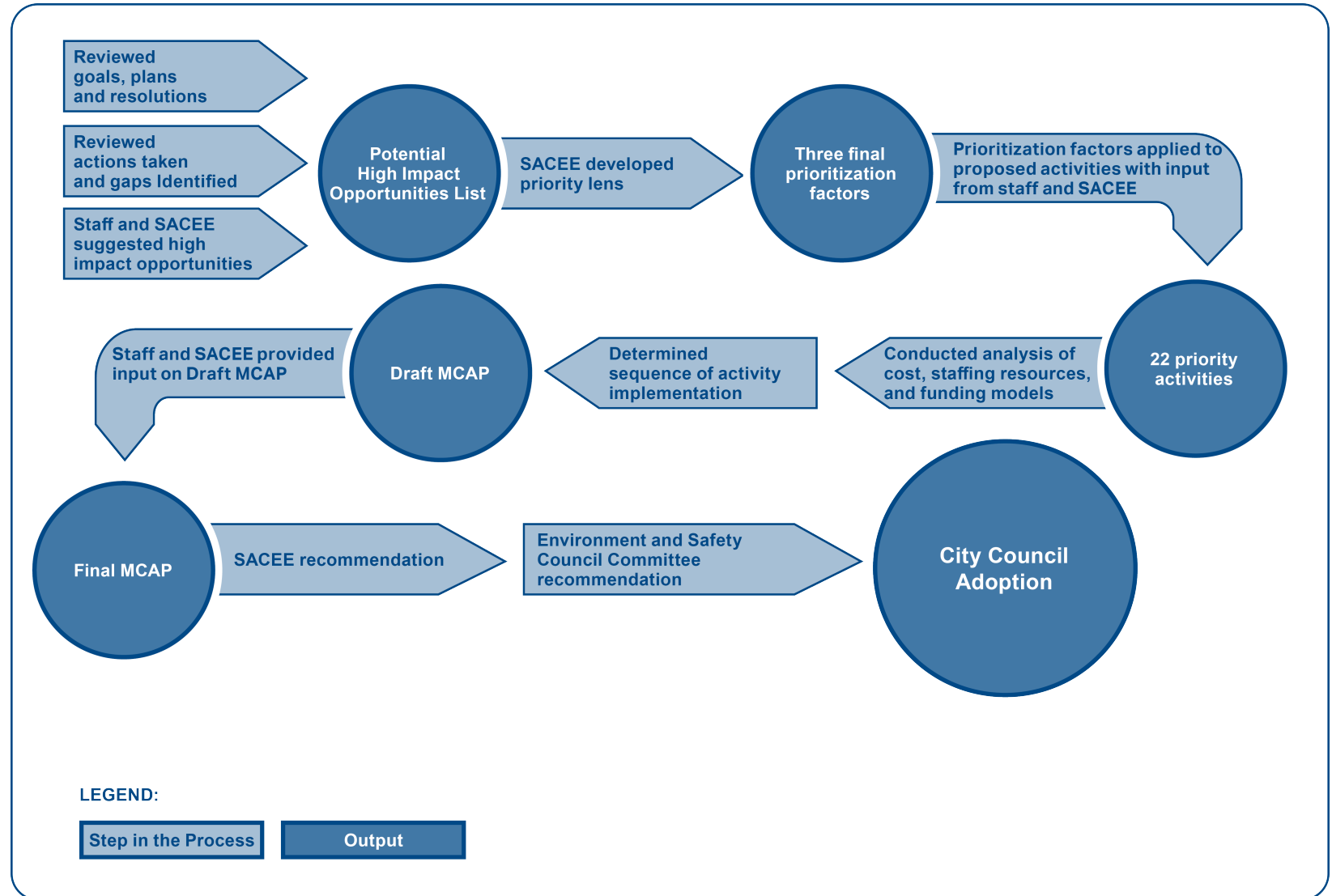


*Elder & Sage Community Gardens*

## Introduction

The MCAP is an update to the 2009 SMP that recommends activities to advance the City of Asheville ambitious climate and sustainability goals. The scope of the plan and recommended activities are limited to municipal operations and its success relies on collaboration and innovation across the organization and identification of key resources to fill gaps. This document is designed to be overarching, recognizing that as policies and plans recommended herein are implemented further study may be required at the project level. Thoughtful planning including best practice research, consideration of life cycle costs and awareness of regulatory constraints are critical to successful plan implementation to address climate adaptation and mitigation. Identification of performance measures and opportunities for data tracking and reporting will ensure that progress toward goals is shared with the public (see **Tracking Progress**). Goals, focus areas, and activities detailed in the MCAP were identified through the process outlined in **"FIGURE 1: MCAP DEVELOPMENT PROCESS"** with impact, feasibility and equity identified as prioritization factors to support plan development and strategy.

This MCAP was developed as a collaborative effort between staff from multiple City departments and with input from the Sustainability Advisory Committee on Energy and the Environment (SACEE). Engagements with City staff and SACEE complemented a review of Asheville's sustainability and climate goals and activities to align them with current City priorities, policies, and 2036 Vision.

**FIGURE 1: MCAP DEVELOPMENT PROCESS**



Reviewed goals, plans and resolutions

Reviewed actions taken and gaps Identified

Staff and SACEE suggested high impact opportunities

Potential High Impact Opportunities List

SACEE developed priority lens

Three final prioritization factors

Prioritization factors applied to proposed activities with input from staff and SACEE

Staff and SACEE provided input on Draft MCAP

Draft MCAP

Determined sequence of activity implementation

Conducted analysis of cost, staffing resources, and funding models

22 priority activities

Final MCAP

SACEE recommendation

Environment and Safety Council Committee recommendation

City Council Adoption

LEGEND:

Step in the Process     Output

## Sustainability and Climate Progress

Asheville has a long-standing commitment to sustainability and climate action throughout its history. This commitment has been demonstrated through both binding City resolutions and investments in new technologies and programs. In recent years, the City has acknowledged the disproportionate impact of climate change on low income and Black, Indigenous, and People of Color (BIPOC) communities, and has started to take steps to advance climate equity and climate justice.

A timeline of the key policies that the City has passed in order to advance sustainability goals is presented in **Figure 2**.

The policies passed by the City have set specific goals in a variety of climate related areas. These include achieving LEED certification for new City buildings, reducing carbon emissions by 80%, reducing municipal waste by 50%, and transitioning to 100% renewable energy. The timeline in **Figure 3** shows select investments and activities that have made progress towards these goals. The MCAP builds on this long history to better prepare Asheville for a resilient, sustainable future.

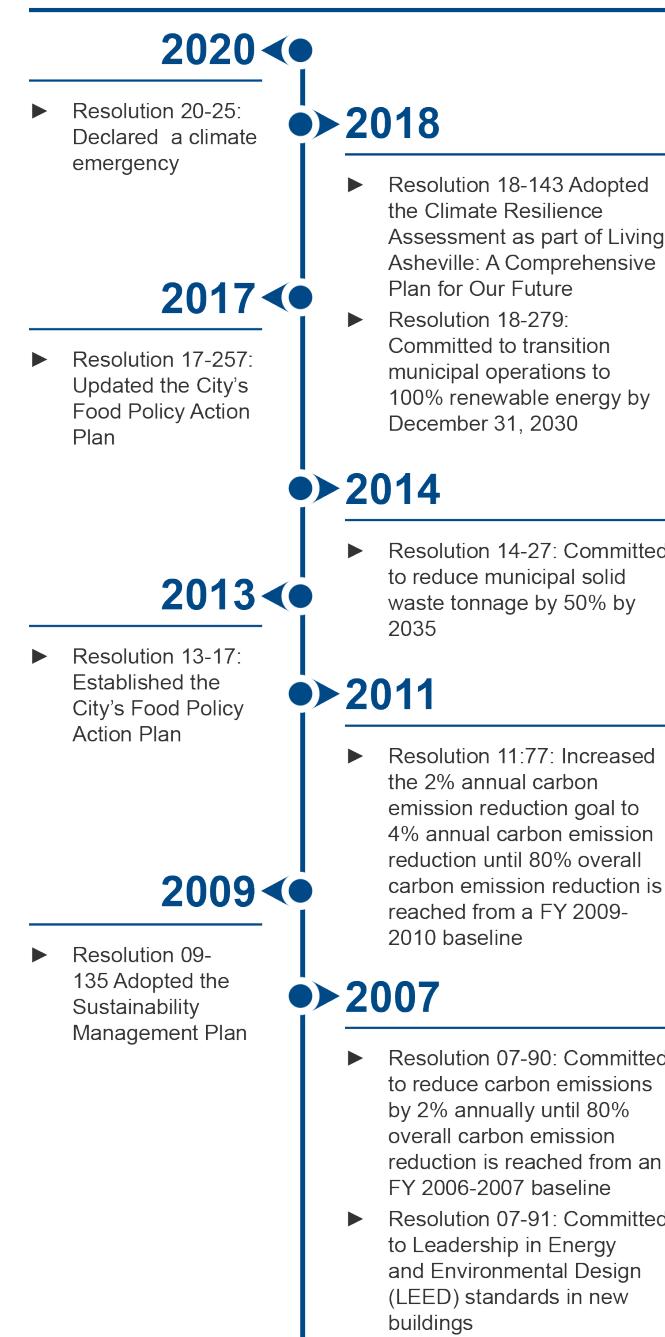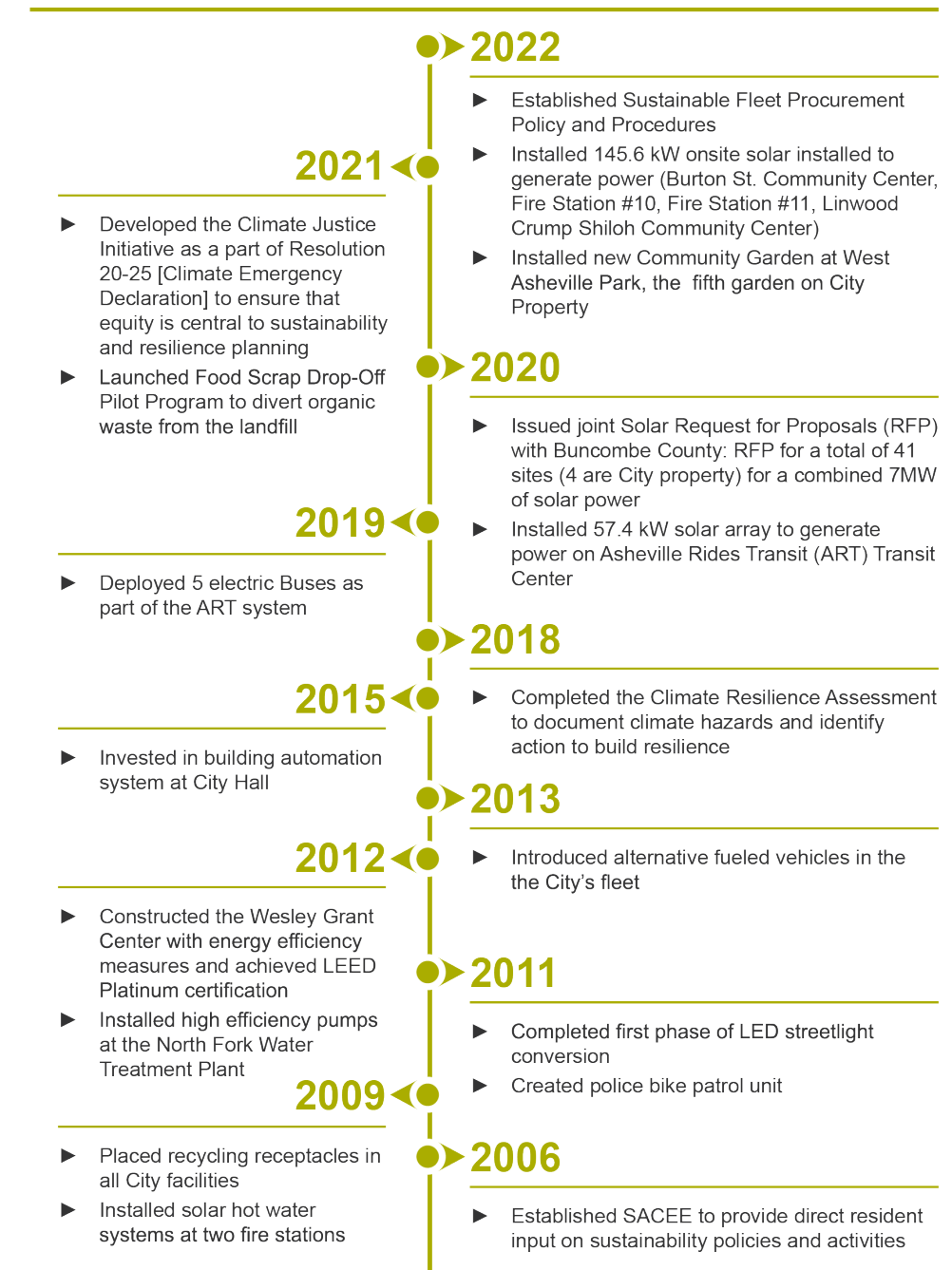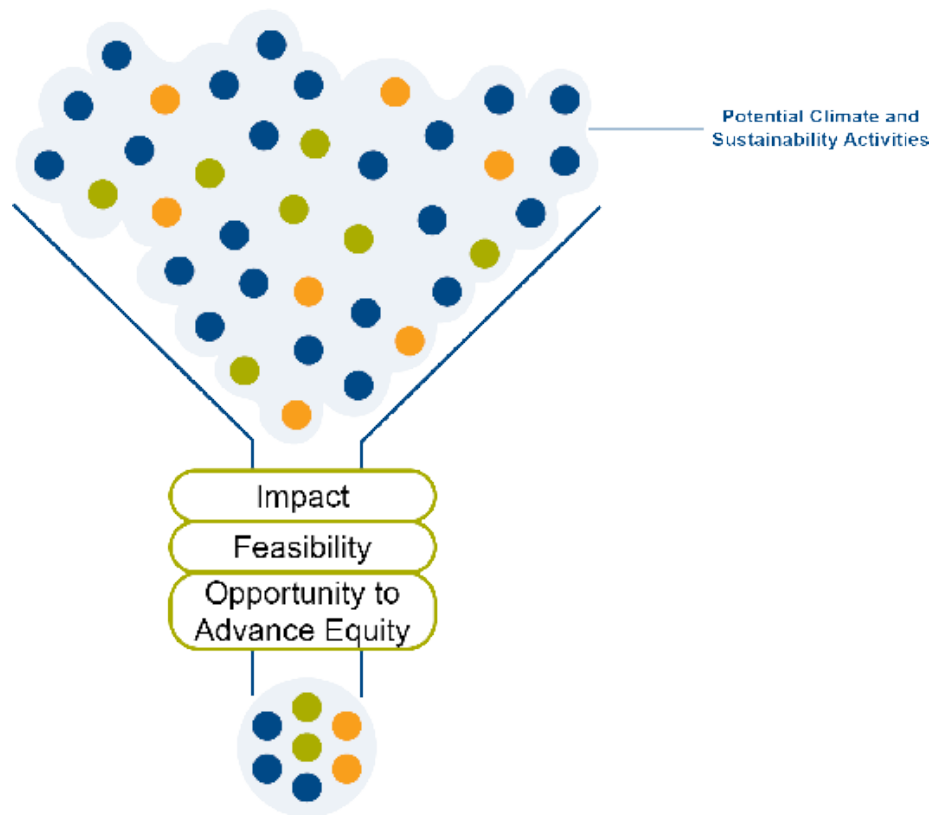**FIGURE 2**

### Timeline of Key Sustainability Policies

**2020**
- ▶ Resolution 20-25: Declared a climate emergency

**2018**
- ▶ Resolution 18-143 Adopted the Climate Resilience Assessment as part of Living Asheville: A Comprehensive Plan for Our Future
- ▶ Resolution 18-279: Committed to transition municipal operations to 100% renewable energy by December 31, 2030

**2017**
- ▶ Resolution 17-257: Updated the City's Food Policy Action Plan

**2014**
- ▶ Resolution 14-27: Committed to reduce municipal solid waste tonnage by 50% by 2035

**2013**
- ▶ Resolution 13-17: Established the City's Food Policy Action Plan

**2011**
- ▶ Resolution 11:77: Increased the 2% annual carbon emission reduction goal to 4% annual carbon emission reduction until 80% overall carbon emission reduction is reached from a FY 2009-2010 baseline

**2009**
- ▶ Resolution 09-135 Adopted the Sustainability Management Plan

**2007**
- ▶ Resolution 07-90: Committed to reduce carbon emissions by 2% annually until 80% overall carbon emission reduction is reached from an FY 2006-2007 baseline
- ▶ Resolution 07-91: Committed to Leadership in Energy and Environmental Design (LEED) standards in new buildings

**FIGURE 3**

### Timeline of Select Actions Taken Toward Climate Goals

**2022**
- ▶ Established Sustainable Fleet Procurement Policy and Procedures
- ▶ Installed 145.6 kW onsite solar installed to generate power (Burton St. Community Center, Fire Station #10, Fire Station #11, Linwood Crump Shiloh Community Center)
- ▶ Installed new Community Garden at West Asheville Park, the fifth garden on City Property

**2021**
- ▶ Developed the Climate Justice Initiative as a part of Resolution 20-25 [Climate Emergency Declaration] to ensure that equity is central to sustainability and resilience planning
- ▶ Launched Food Scrap Drop-Off Pilot Program to divert organic waste from the landfill

**2020**
- ▶ Issued joint Solar Request for Proposals (RFP) with Buncombe County: RFP for a total of 41 sites (4 are City property) for a combined 7MW of solar power
- ▶ Installed 57.4 kW solar array to generate power on Asheville Rides Transit (ART) Transit Center

**2019**
- ▶ Deployed 5 electric Buses as part of the ART system

**2018**
- ▶ Completed the Climate Resilience Assessment to document climate hazards and identify action to build resilience

**2015**
- ▶ Invested in building automation system at City Hall

**2013**
- ▶ Introduced alternative fueled vehicles in the the City's fleet

**2012**
- ▶ Constructed the Wesley Grant Center with energy efficiency measures and achieved LEED Platinum certification
- ▶ Installed high efficiency pumps at the North Fork Water Treatment Plant

**2011**
- ▶ Completed first phase of LED streetlight conversion
- ▶ Created police bike patrol unit

**2009**
- ▶ Placed recycling receptacles in all City facilities
- ▶ Installed solar hot water systems at two fire stations

**2006**
- ▶ Established SACEE to provide direct resident input on sustainability policies and activities

## Activity Prioritization

Several potential actions were considered for inclusion in the MCAP. To focus efforts and best manage resources, a process was developed in cooperation with SACEE to prioritize actions based on their impact, feasibility, and ability to advance equity. Using this process, 22 activities are recommended for implementation, as shown in **Figure 4**.
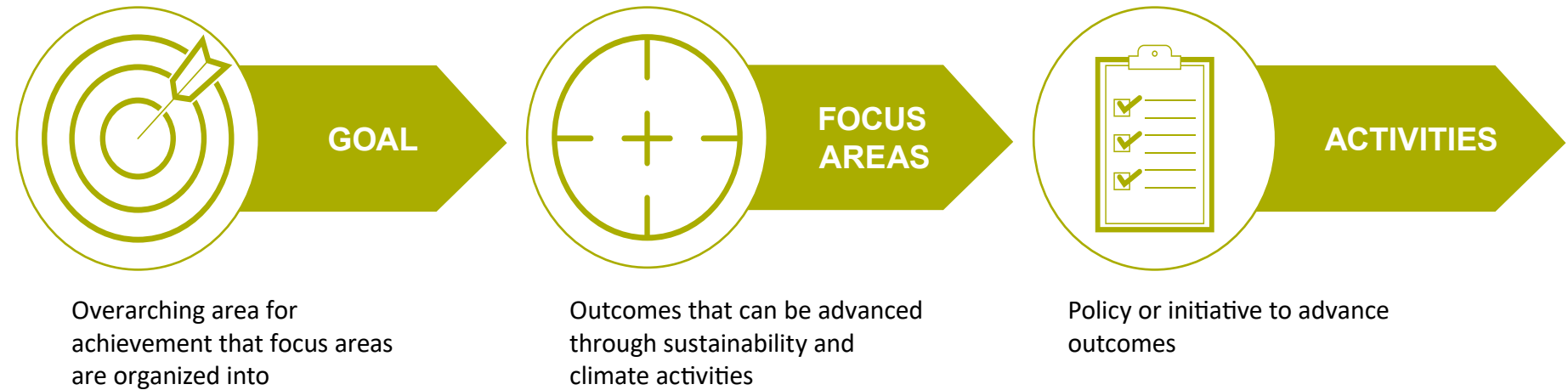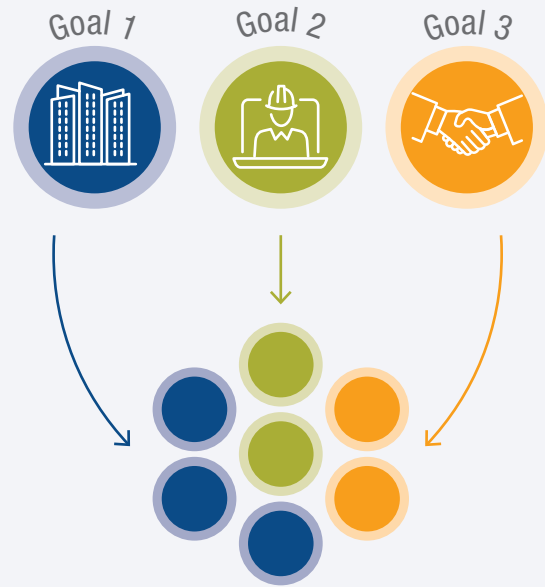
FIGURE 4: ACTIVITY PRIORITIZATION



Potential Climate and Sustainability Activities

Impact

Feasibility

Opportunity to Advance Equity

## Framework

The MCAP framework includes three goals organized into focus areas to guide Asheville's implementation of 22 sustainability and climate activities, as shown in **Figure 5**.

FIGURE 5: MCAP FRAMEWORK



**GOAL**

Overarching area for achievement that focus areas are organized into

**FOCUS AREAS**

Outcomes that can be advanced through sustainability and climate activities

**ACTIVITIES**

Policy or initiative to advance outcomes

## GOALS

The City of Asheville's three goals are represented with color and icons in the project logo.

## FOCUS AREAS

Each individual goal has defined focus areas identified by the number of colored circles in the project logo.

# Goal 1

**City-Owned Assets Are Resilient, Sustainable, and Efficient**

**Focus Area 1.1: Use 100% Renewable Energy For City-Owned Facilities And Enhance Energy Efficiency For City-Owned Facilities**

**Focus Area 1.2: Equip City Assets To Prevent, Withstand, and Recover From Disruptions**

**Focus Area 1.3: Decarbonize Fleet Vehicles and Fleet Operations**

# Goal 2

**Sustainability and Climate Priorities are Embedded In City Operations, Participation, and Decision Making**

**Focus Area 2.1: Embed Sustainability, Resilience, and Equity In Decision-Making and Planning**

**Focus Area 2.2: Identify Opportunities To Reduce Waste Generation and Improve Diversion**

# Goal 3

**The City Supports Sustainability and Resilience For Area Residents and Businesses**

**Focus Area 3.1: Collaborate On and Support Community-Based Solutions and Infrastructure Improvements To Prevent, Withstand, and Recover From Disruptions**

**Focus Area 3.2: Facilitate Inclusive Sustainability, Climate, and Resilience Communications, Education, and Outreach**
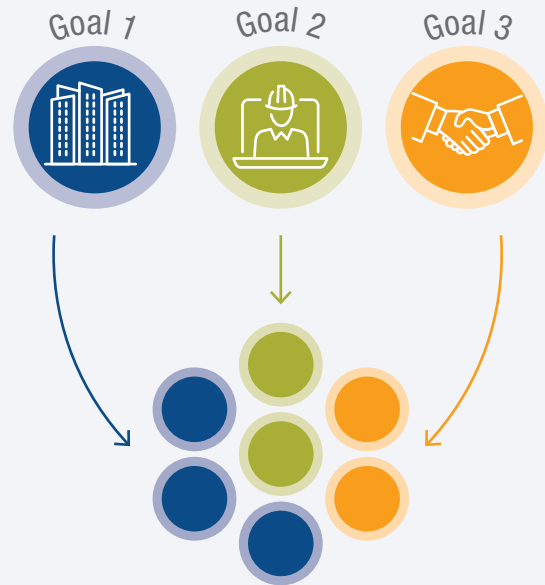
## GOALS

The City of Asheville's three goals are represented with colour and icons in the project logo.

## ACTIVITIES (1-22)

Within each goal area are a list of 22 detailed activities

# Goal 1

## City-Owned Assets are Resilient, Sustainable, and Efficient

1. Continue Installation of Renewable Energy Resources on Municipal Property
2. Utilize Alternatives to On-Site Solar to Meet Targets
3. Expand Energy Efficiency Standards for All New Construction to Retrofits and Upgrades
4. Establish Building Energy Efficiency Operations and Maintenance Requirements
5. Incorporate Equity and Sustainability into Processes to Address Aging Infrastructure
6. Update City-owned Building Standards for Resilience Considerations
7. Establish a Policy for the Purchase, Sale, or Adaptive Reuse of Highly Vulnerable or Underutilized Assets
8. Investigate and Install Building Automation for All City Facilities
9. Integrate Climate Justice, Equity, and Resilience Best Practices into All Hazards Planning Committee and Emergency Response Plans and Operations
10. Enhance Stormwater Control Measures for City-owned Property
11. Assess and Enhance Efficiency and Resilience of Municipal Water Distribution System
12. Utilize Green Fleet Policy for Fleet Electrification
13. Conduct Low-Carbon Transit Assessment

# Goal 2

## Sustainability and Climate Priorities are Embedded In City Operations, Participation, and Decision Making

14. Use Climate Justice and Sustainability Tools for Planning and Decision Making
15. Monitor and Engage in State-Level and Utility Policies on Climate and Sustainability
16. Establish Sustainable Oriented Procurement Procedures
17. Conduct Solid Waste Master Planning Process

# Goal 3

## The City Supports Sustainability and Resilience For Area Residents and Businesses

18. Utilize Urban Forestry Practices on City Land in Priority Neighborhoods to Reduce Heat Island Impacts and Sequester Carbon
19. Explore City Supported Community Resilience Hub Sites
20. Conduct Programs for Food Production, Community Gardening, and Edible Plantings on Public Lands
21. Make Climate and Sustainability-related Data and Progress Towards Goals Publicly Accessible
22. Create a Sustainability and Climate Ambassador Program to Regularly Engage Frontline Communities

# Sustainability and Climate Goals and Activities

The following pages provide a high-level description of the 22 recommended activities within the MCAP framework. In addition to an overview of each activity, the following information is provided:

## Climate Adaptation Action

Efforts to cope with and withstand the impacts associated with climate-related hazard events or attributed to climate change.

## Climate Mitigation Action

Efforts to reduce greenhouse gasses from the combustion of fossil fuels that cause climate change.

## Operational Resources

► **Lead Implementers:** City departments or offices that are the lead organization(s) responsible for activity planning and/or implementation.

► **Supporting Departments:** City departments or offices contributing to activity planning and/or implementation.

► **Resource Gaps:** Necessary funding, staff capacity, or other resources identified as lacking or insufficient to plan and/or implement activities.

## Funding

The cost of planning and/or implementation are noted according to the following scale:

$       $0 - $500,000

$$      $500,000 - $1,000,000

$$$     $1,000,000 - $5,000,000

$$$$    $5,000,000+

## Implementation Timeframe

As described more fully later in the document (see **Implementation**), the initial recommended timeframes for planning or implementation are noted as:

**Short:**    Years 0 - 2

**Medium:**   Years 3 - 4

**Long:**     Year 5 and beyond

**Ongoing:**  Existing programs for which continued or additional investment is recommended.

*Blue Ridge Mountains*

# Goal 1

## City-Owned Assets are Resilient, Sustainable, and Efficient

Goal 1 is focused on ensuring that City-owned assets are resilient, sustainable, and efficient. As such, assets will have a low impact on the environment and the environment has a reduced impact on them, capturing both sides of climate action: mitigation and adaptation. Activities under this goal include long term policies, processes, and improvements for the City's energy use and generation, building performance and resilience, and fleet and transit vehicles. This goal is aligned with the City's established, policy-based efforts related to carbon emission reduction, renewable energy supply, and climate emergency.

### Focus Areas

**Focus Area 1.1:** Use 100% Renewable Energy For City-Owned Facilities and Enhance Energy Efficiency For City-Owned Facilities

**Focus Area 1.2:** Equip City Assets To Prevent, Withstand, and Recover From Disruptions

**Focus Area 1.3:** Decarbonize Fleet Vehicles and Fleet Operations



*Solar Array at Fire Station #11*
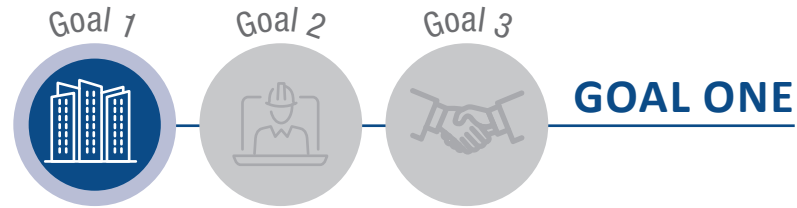
Goal 1  Goal 2  Goal 3

# GOAL ONE

**Focus Area 1.1: Use 100% Renewable Energy for City-Owned Facilities and Enhance Energy Efficiency for City-Owned Facilities**

Focus area 1.1 is directly aligned with City goals for carbon emission reduction and renewable energy, specifically targeting 100% renewable energy and improved energy efficiency for City-owned buildings. This focus area is important to climate mitigation by reducing emissions and the amount of energy the City requires from the grid as well as increasing the amount of renewable energy the City is able to generate to meet its needs. Strategies in this focus area include efforts to diversify the City's energy supply through solar energy installation and improving the energy efficiency of the City's assets and facilities.

## ACTIVITIES

### 1. Continue Installation of Renewable Energy Resources on Municipal Property

Increasing use of renewable energy resources, like solar or hydroelectric, is a key component to reducing reliance on fossil-powered electricity, lowering carbon emissions, and furthering global progress towards mitigating the effects of climate change.

By using existing municipal land or rooftops for solar photovoltaic (PV) installation, the City will come closer to meeting its renewable energy and carbon reduction goals and positively contribute to broader sustainability efforts without requiring purchases of additional land, construction of new buildings, or clearance of forests.

The City has already made progress towards its renewable energy goals through installation of solar arrays on municipal buildings. The City will continue this momentum by seeking out additional sites with solar potential in effort to achieve its 100% renewable energy by the 2030 goal.

The Capital Projects Department will lead implementation of this activity by incorporating assessments of rooftop solar readiness into existing roof replacement projects funded through the rooftop replacement fund. As assessments are completed, the City will build and maintain a list of ideal candidates for rooftop or ground-mount solar identified through the assessments.

The City will install solar at the identified sites on the list as funding becomes available.

### Operational Resources

◈ **Lead Implementers:** Capital Projects

◈ **Supporting Departments:** Sustainability

◈ **Resource Gap:** Staff capacity within the Facilities Maintenance Division to manage on-going third party operations and maintenance. Capital funding in the roof replacement fund and Capital Improvement Program (CIP) for renewable energy installations, supporting infrastructure and site preparations.

### Funding  $$$$

This activity currently utilizes funds from the CIP and roof replacement fund (for installations) and General Fund/operating budget (for 3rd party maintenance contracts). While this is an ongoing activity, current levels of funding are inadequate to fully implement this activity. Funding may be expanded to include grants, governmental incentives and public private partnerships.

### Implementation Timeframe  Ongoing

Goal 1  Goal 2  Goal 3

## GOAL ONE
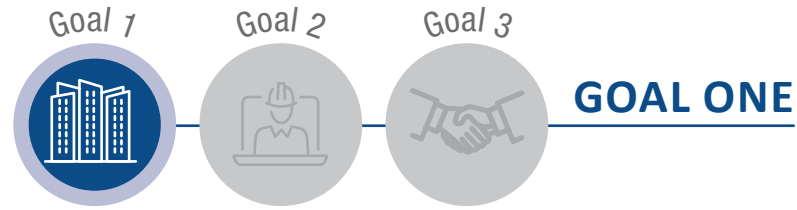
**2.  Utilize Alternatives to On-Site Solar to Meet Targets**

While on-site solar is the most direct and visible way to expand the City's percentage of energy procured from renewable resources, limitations due to space, finances, and state regulations makes meeting the City's 100% renewable energy target solely through solar generation on municipal property infeasible. Pursuing alternatives to on-site solar is essential to meeting the 100% renewable energy goal.

Given that the City does not have enough rooftop or ground space for on-site solar to meet its renewable energy target, the City will pursue opportunities for the purchase of renewable energy through Duke Energy, its electric utility service provider. While North Carolina law does not allow energy users to enter into Power Purchase Agreements (PPAs) with renewable energy suppliers directly, Duke's Green Source Advantage Program [2] allows large energy users to negotiate terms to site and build solar arrays within Asheville's utility territory with renewable energy suppliers who then enter into a PPA with the utility. The customer (large energy user) receives credit for the energy produced on their utility bill and any Renewable Energy Certificates (RECs) generated.

The program is available on a first come, first served basis and has limited capacity available. [3] The City should continue to work with Duke Energy, alongside other large energy users, to encourage the development of additional renewable energy procurement programs.

**Operational Resources**

◈ **Lead Implementers:** Finance and Management Services (Purchasing and Contracting) and Sustainability

◈ **Supporting Departments:** Communication and Public Engagement Department, Community and Economic Development, and Legal

◈ **Resource Gap:** Procurement programs approved by the NC Utilities Commission that meet the organization's and community's parameters. Capital and operational funding to invest in off site renewable energy installations; identification of a dedicated funding source for this expense.
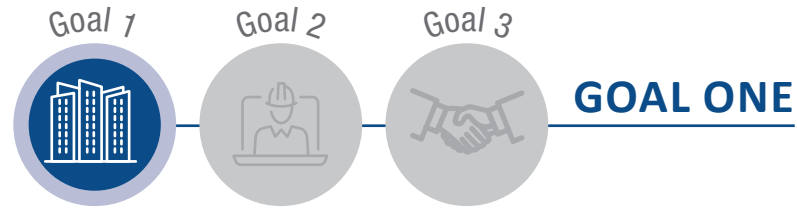
**Funding**  $-$$$$

Costs for this activity will vary based on available renewable energy measurement and tracking systems as well as the procurement programs available to the City. The 2022 approval of the NC Carbon Plan suggests that additional procurement programs will be introduced over the next 25 years.

**Implementation Timeframe**  Medium



*57.4 kW Solar Array at the ART Transit Center*

Goal 1    Goal 2    Goal 3

## GOAL ONE

**3. Expand Energy Efficiency Standards for All New Construction to Retrofits and Upgrades**

Reducing energy usage through standardized energy efficient construction, upgrades, or retrofits is a direct path to reducing emissions, creating healthier building environments, and mitigating the effects of climate change. The City's existing goal of LEED certification for new construction sets the foundation for this expanded policy development and ensures that mitigation work is ongoing during the initial new policy development phase. While the City must meet the energy provisions of the North Carolina State Building Code, [4] the Code is based upon outdated ASHRAE energy standards published in 2016. [5]

To advance the carbon reduction goals, the City should establish efficiency targets, and develop energy efficiency standards for all new construction, upgrades and retrofits based on a more recent version of the ASHRAE building standards. Analysis has been shown that in North Carolina, following more recently developed standards can save energy, reduce greenhouse gas emissions, lower utility bills, and result in lower building operational costs. [6]

A foundational step to determine what energy efficiency standards are appropriate is to establish energy efficiency targets for existing buildings. The City should review existing information regarding City building and system energy use, performance, and efficiency from a variety of sources including energy audits and benchmarking tools such as the ENERGY STAR® [7] Portfolio Manager®, and information contained in the City's Comprehensive Facilities Study (CFS) to establish energy efficiency and energy production strategies that are designed to move the City toward its sustainability goals. The CFS will also model improvements on select facilities, provide cost estimates of those improvements, and apply those estimates to additional facilities.

The budgetary estimates for reaching these goals will inform how quickly the City can reach the facilities portion of its sustainability goals. Once goals and budgets are established, the City will then review existing energy standards to determine which version is appropriate to adopt for City facilities. This will be accomplished through a cross departmental workgroup.

Those standards could be modeled after the most recent ASHRAE energy standards or the various LEED level efficiency standards, among others. To be most effective, the standard should be clearly applied to upgrades, retrofits, and replacements in buildings and their systems.

The City should periodically review efficiency performance, the targets, and newly released standards to identify opportunities for improvement and/or revisions.

**Operational Resources**

- ◈ **Lead Implementers:** Capital Projects and Sustainability
- ◈ **Supporting Departments:** Finance and Management Services
- ◈ **Resource Gap:** Captal funding to implement expansion of policy to include retrofits and upgrades. Once the policy is enhanced, additional assessments will be required to ensure existing designs and plans accommodate the new standards. Current levels of funding are inadequate to address existing deferred maintenance and these performance objectives.
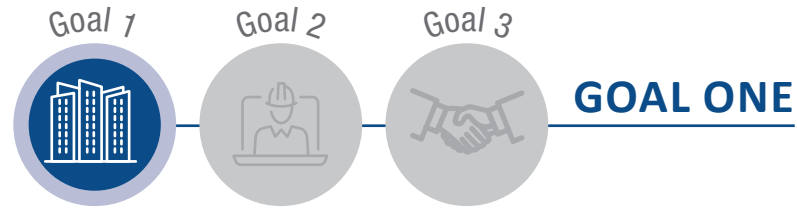
**Funding**   $-$$$$

This activity primarily utilizes funding from the CIP and debt obligations. Federal funding opportunities within the Inflation Reduction Act may also be applicable.

**Implementation Timeframe**   Medium

Implementation is already occurring for new construction projects, expansion of this policy is suggested to be a mid-term priority so it may be informed by the 2023 Comprehensive Facilities Study.

Goal 1   Goal 2   Goal 3

## GOAL ONE

**4. Establish Building Energy Efficiency Operations and Maintenance Requirements**

Establishment of energy efficiency maintenance and operations requirements goes hand in hand with standardized energy efficient appliances, retrofits, and upgrades.

Implementing both practices will lower building energy usage, reduce emissions, and save on upfront capital and energy costs. Implementation will also integrate sustainability considerations and a "sustainability mindset" into procurement, maintenance, and other staff throughout the City. Defining these requirements also saves time by establishing a protocol for future and existing staff to follow, reducing training times or uncertainty around procedures.

The City will establish building energy demand management and energy efficiency maintenance and operations requirements for facility staff to maintain occupant comfort and employee productivity while ensuring building and equipment energy usage is monitored and/or reduced to eliminate unnecessary energy consumption.

This activity will begin with reviewing existing demand management and energy efficiency related operations and maintenance policies and procedures; energy demand data; building performance (through and benchmarking tools such as the ENERGY STAR® Portfolio Manager® and energy audits), and maintenance records.

Based upon this review, staff should identify areas in which procedures need to be established or modified to increase energy efficiency, monitor and adjust usage, and areas in which additional training may be necessary.

The City will also consider expanding department staffing or creating a new position for an energy engineer and corresponding asset management and support staff to specifically address energy efficiency needs. Without additional capacity, the implementation of this activity may be delayed. With added capacity, the City will better maximize opportunities for efficiency savings from capital investments through monitoring energy use and usage patterns, adjusting operational requirements to reduce energy demand, and ensure adequate maintenance to keep equipment running at maximum efficiency.

**Operational Resources**

◈ **Lead Implementers:** Capital Projects (Facilities Maintenance)
◈ **Supporting Departments:** Communications and Public Engagement, Finance and Management Services, and Sustainability
◈ **Resource Gap:** Staff capacity and training within the Capital Projects Department to fulfill estimated policy requirements as well as operational funding for facility monitoring applications and third party operations and maintenance agreements for assets utilizing new or specialized technologies.

Current levels of funding are inadequate to address existing deferred maintenance and these performance objectives.

**Funding**   $$$$

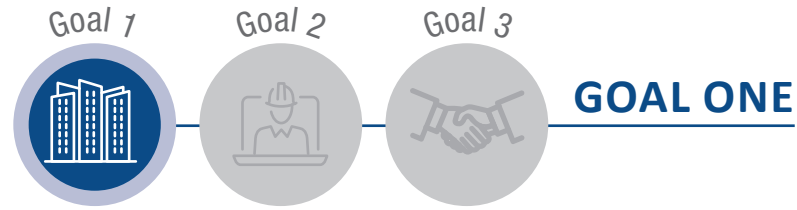This activity primarily utilizes funding from the General Fund.

**Implementation Timeframe**   Medium

Implementation is already occurring as there are best practices already in use but this activity would formalize and expand these efforts into a policy.


*Grove Arcade - By Jon Bilous*

Goal 1  Goal 2  Goal 3

**GOAL ONE**

**Focus Area 1.2: Equip City Assets to Prevent, Withstand, and Recover From Disruptions**

Focus area 1.2 aims to enhance City resilience through investment in policies and infrastructure to prevent, prepare for, withstand, and recover from disruptions. The activities seek to improve City processes and equity-based approaches to new and existing assets.

## ACTIVITIES

**5. Incorporate Equity and Sustainability into Processes to Address Aging Infrastructure**

Some of Asheville's City-owned infrastructure, like roads, bus stops, parks, and sidewalks, are in need of repair due to environmental factors and general use. Aging infrastructure poses safety and resiliency risks and should be addressed in an equitable and sustainable manner to improve quality of life, particularly in communities deemed most vulnerable by the City's Climate Justice Data Map. [8]

The City should refine existing project decision making matrices and capital investment prioritization tools to ensure that equity is considered, along with other project performance and cost factors, when addressing aging infrastructure.

The Department of Equity and Inclusion will work with other departments to review and revise, as needed, frameworks for prioritizing project implementation or budget requests for infrastructure repair or replacement.

The review will identify opportunities to include existing data points and tools, such as the Climate Justice Data Map, and the Climate Resilience Assessment, [9] into decision making processes. This activity supports the implementation of the City's Equity Action Plan that is currently under revision.

**Operational Resources**

◆ **Lead Implementers:** Capital Projects, Equity and Inclusion, and Public Works

◆ **Supporting Departments:** Communications and Public Engagement, Finance and Management Services, Parks and Recreation, and Sustainability
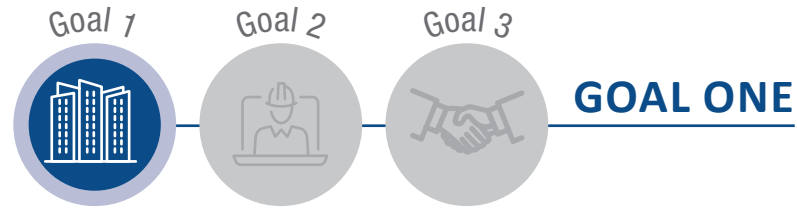
◆ **Resource Gap:** None identified at this time

**Funding** $

Funding for the development and maintenance of relevant tools to meet departmental needs will likely come from the General Fund/operating budget. Implementation may utilize the CIP, debt obligation or grants.

**Implementation Timeframe** Short


*City of Asheville City Hall - By Derek Olson Photography*

Goal 1    Goal 2    Goal 3

## GOAL ONE

### 6. Update City-Owned Building Standards for Resilience Considerations [10]

As the climate changes, it is increasingly important to ensure that new buildings and major retrofits or repairs are constructed to withstand and recover from climate related events. This activity encompasses updating the building standards for City-owned buildings to include appropriate resilience measures. Resilient building design minimizes the loss of critical function due to adverse events such as flooding, drought, extreme temperatures, or wildfires. Resilient buildings also have the capacity to fully recover from such events more quickly than traditionally designed buildings. In addition to the benefits of maintaining and recovering functionality, studies have shown that the benefits of investments in resilience measures can far outweigh the costs over time. [11]

The City will review and update its building standards to incorporate resilience requirements by first identifying appropriate resilience standards. Resilience standards will vary by the function or purpose of the building and the risk or vulnerability involved.

Resilience standards for critical facilities should be prioritized and addressed before those for other buildings. [12] Applicable standards for critical facilities are often prescribed by agencies regulating and/or funding such facilities.

The City will then develop a methodology for the process of identifying and adopting standards for remaining buildings. The U.S. Department of Housing and Urban Development (HUD) has created a useful tool for identifying resilience considerations and standards for both commercial and residential buildings. The HUD Resilient Building Code Toolkit [13] provides information regarding existing model codes and standards to address hazard-specific interventions for wildfire, inland flooding, extreme heat and cold, and wind; case studies; and information to support the business case for standard adoption. The City should apply standards to groups of buildings with similar resilience needs based on function, vulnerabilities based upon the Climate Resilience Assessment, or other factors.

After the building standards for City-owned buildings are updated to include resilience standards, the City should create a policy for how the standards will be applied to construction and retrofit projects.

Additional components of this activity will include training staff to operate and maintain facilities in a manner designed to retain their resiliency and communication to build the community's awareness of the availability of shelters and services before, during and after emergency events.
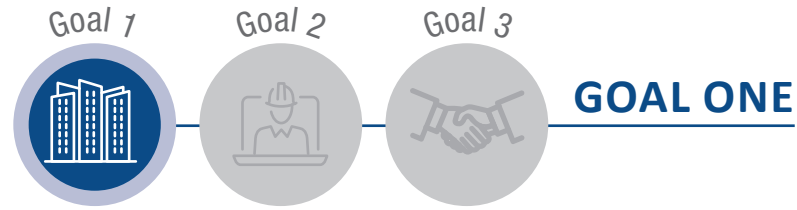
### Operational Resources

◈ **Lead Implementers:** Capital Projects, Development Services, Planning and Urban Design

◈ **Supporting Departments:** Finance and Management Services, Fire, and Sustainability

◈ **Resource Gap:** Capital funding to assess and implement resilience standards in new buildings, retrofits, and repairs

### Funding        $-$$$$

This activity primarily utilizes funding from the CIP and debt obligations but may also receive funding from the General Fund/operating budget, grants and government incentives.

Funding required will also vary based on standard adoption and planning ($), and building construction and resilience needs involved ($$$$).

### Implementation Timeframe        Short



*City of Asheville - By Jon Bilous*

Goal 1  Goal 2  Goal 3

## GOAL ONE

**7. Establish a Policy for the Purchase, Sale, or Adaptive Reuse of Highly Vulnerable or Underutilized Assets**

Certain facilities or other assets owned by the City are particularly vulnerable to climate impacts or underutilized and should be assessed for their future usability. At times, the City also has the opportunity to acquire assets which are vulnerable to climate impacts. In order to address the possible financial risks of holding onto these vulnerable and/or under-utilized assets or acquiring vulnerable assets, the City will establish a policy for the purchase, sale, or adaptive reuse of these facilities.

The policy will guide decision making regarding the acquisition, disposition or adaptive reuse of assets that are identified as vulnerable in the Climate Resilience Assessment [14] or those which do not assist in core service delivery and are expensive and carbon intensive to maintain. Real estate assets that offer little reuse opportunity but are underutilized and highly vulnerable are prime candidates for sale to other interested parties.

The policy should require the consideration of: the costs of acquisition, hardening the asset to better withstand the climate impact, restoration following an event, and reconfiguration for reuse; the level of vulnerability or risk; the remaining useful life of the facility; the level of use; and the potential revenue or savings generated by sale or change in use.

By incorporating sustainability, resilience, and adaptation considerations into purchase, sale, or adaptive reuse of aging and underutilized facilities, the City should take a proactive approach in ensuring all assets it owns will continue to meet the needs of the community long into the future and are resilient to the impacts of climate change.

**Operational Resources**

- ❖ **Lead Implementers:** Capital Projects, Community and Economic Development, Finance and Management Services, and Planning and Urban Design
- ❖ **Supporting Departments:** Public Works and Sustainability
- ❖ **Resource Gap:** Staff assigned to shepherd real estate analysis and actions

**Funding** $

This activity will utilize funding from the General Fund/operating budget but may also benefit from grants and government incentives.

**Implementation Timeframe** Short

Goal 1   Goal 2   Goal 3

## GOAL ONE
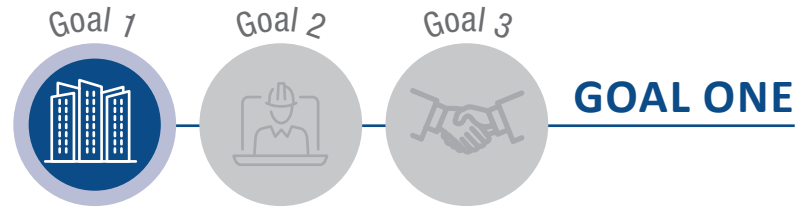
### 8. Investigate and Install Building Automation for All City Facilities

Inefficient buildings due to factors like aging energy systems or non-automated heating, ventilation, and air conditioning (HVAC) and lighting controls can result in wasting up to 30% of a building's energy consumption, according to a recent Massachusetts Institute of Technology study. [15] Investigating and installing building automation systems to reduce excess energy usage during times of low building occupancy, such as automatic light shut offs or weekend/overnight HVAC reductions, can limit this wasted energy as well as reduce costs and emissions. Installing an automated building management system will assist the City in achieving its LEED Certification goals for buildings across its footprint. An integrated Building Management System (BMS) will also help facility managers assess and track energy usage over time to identify patterns or irregularities, enabling corrected or optimized energy use across City buildings.

The City will research the BMS market and determine the appropriate system for the City's facility needs to enable uniform system controls, energy and building usage monitoring, and competitive service delivery.

Once the ideal system has been identified and approved, the City will install a compatible and consistent open protocol BMS across all City buildings (excluding auxiliary facilities such as restrooms and concession stands) and require BMS installation in new facilities where appropriate.

To further enhance this strategy, the City should establish a standard operating procedure for building automation and train staff for BMS management and oversight.

### Operational Resources

- **Lead Implementers:** Capital Projects and Information Technology Services
- **Supporting Departments:** Community and Regional Entertainment Facilities and Sustainability
- **Resource Gap:** Capital funding to install or modernize a BMS across appropriate City facilities and operational funding to train staff to install and/or operate BMS. Current levels of funding are inadequate to fully implement this activity.
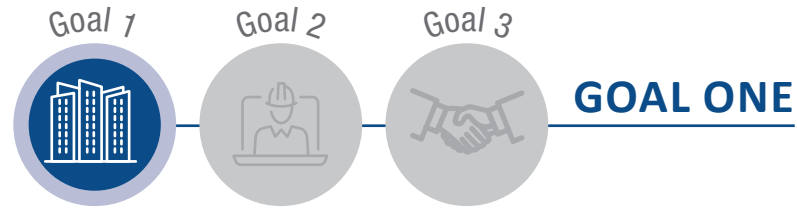
### Funding   $-$$$$

This activity may utilize funding from the CIP and debt obligations, General Fund/operating budget but may also benefit from grants and governmental incentives. Funding this activity will vary depending on the need from investigating and determining the appropriate system ($) to funding the installation of comprehensive BMS systems ($$$$).

### Implementation Timeframe   Medium



*Green roof at the Dr. Wesley Grant Sr. Southside Community Center*

Goal 1    Goal 2    Goal 3

## GOAL ONE

**9. Integrate Climate Justice, Equity, and Resilience Best Practices into All Hazards Planning Committee and Emergency Response Plans and Operations**

The Asheville All Hazards Planning Committee (AHPC) is comprised of key staff that represent all of the departments within the City of Asheville. The AHPC was created to accomplish the following:

◈ Evaluate information sharing

◈ Identify training needs

◈ Develop best practice for collaboration during significant events/incidents

◈ Develop means to continuously improve our response as a city to significant all hazards events

As climate change results in more frequent and more intense storms and weather-related events, the need to incorporate climate resilience and climate equity considerations into the City's emergency response continues to grow to ensure all residents and communities receive equitable emergency aid and response. Climate resilience and equity considerations should be made for vulnerable groups.

The Sustainability and Equity and Inclusion Departments will engage with the City's AHPC to provide information and tools to incorporate climate justice and climate resilience best practices into emergency response plans and operations, particularly updates to the Emergency Operations Plan and Continuity of Operations Plan which are currently underway.

Engagement should include attending the regularly scheduled meetings, exercise participation, and planning activities to provide information, as well as including AHPC members as stakeholders and advisors to help shape the strategy for climate, resilience and sustainability initiatives . During engagement events, information should be provided that identifies compounding climate and non-climate stressors as mapped in the City's Climate Justice Data Map [16] Emergency response design should consider and elevate needs and vulnerabilities of Asheville's communities to inform equitable, data driven strategies.

To increase community representation and preparedness, the City should work directly with vulnerable communities to ensure plans for hazard mitigation include provisions for those who require additional assistance, provide targeted educational messaging through trusted

sources, and maintain active avenues for community feedback to better understand who is likely to need help in event of an emergency, what kind of help they need, and how to get it to them. The City should also work to overcome language or accessibility barriers that could prevent vulnerable communities from receiving needed aid.
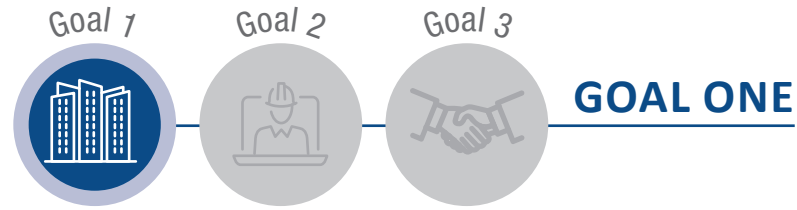
### Operational Resources

◈ **Lead Implementers:** Fire and Sustainability

◈ **Supporting Departments:** Communications and Public Engagement and Equity and Inclusion

◈ **Resource Gap:** None identified at this time

### Funding   $

This activity will utilize funding from the General Fund/operating budget. Recommended actions determined through this activity may require additional funding from other sources.

### Implementation Timeframe   Short

Goal 1  Goal 2  Goal 3

## GOAL ONE

### 10. Enhance Stormwater Control Measures for City-Owned Property

Good water stewardship is an important component of sustainability and climate adaptation. In its Climate Resilience Assessment,[17] the City identified parcels of land across Asheville that are at high, medium, and low risk for flooding. Through enhanced stormwater quality and quantity control measures for City-owned property, Asheville will not only reduce its impact on stormwater runoff on natural waterways in surrounding areas, but also reduce the impact that flooding, storms, and other environmental events can have on City infrastructure, including roads, buildings, greenways and parks.

A functional, modern stormwater system employs multiple tools to capture, clean and move water effectively and efficiently. A community committed to comprehensive management of stormwater and the associated infrastructure also budgets time and resources for ongoing maintenance.

A robust, resilient stormwater system includes both "gray" (gutters, pipes, tunnels, and filters) and "green" (measures that use plant or soil systems, permeable pavement surfaces or substrates) infrastructure. To achieve stormwater system resiliency, the City must focus on updating existing infrastructure.

Pursuit of a whole system upgrade alongside the deployment of green infrastructure models both a diversity of approaches and builds system capacity and resilience. Green infrastructure enhancements can be implemented on an individual, neighborhood and/or community-wide scales. Benefits to a more robust system incorporating innovative green and gray infrastructure, in addition to traditional stormwater control measures include:

- Greater resilience to changing climate conditions
- Broad environmental, social and economic enhancements
- Management and improvement of stormwater quality
- Improvement in air quality
- Reduction of urban heat island effects
- Enhancement of ecological diversity and opportunities for healthy human activity

To enhance current operations, the City will develop a standard operating procedure (SOP) for all departments to consider the use of impactful stormwater control measures during all site development or redevelopment projects and build off the results of the Stormwater Program Analysis and Fee Study.

Additionally, the Public Works Stormwater Division will review its current prioritization process to incorporate criteria that include reductions of flood risk for assets located within high or medium risk areas as identified in the Climate Resilience Assessment and Climate Justice Data Map. Utilizing watershed basin studies to analyze stormwater runoff levels, detect patterns, and determine locations where additional control measures may be needed will further reduce the impact of runoff or flooding.

### Operational Resources

- **Lead Implementers:** Capital Projects and Public Works
- **Supporting Departments:** Development Services, Parks and Recreation, Planning and Urban Design, Sustainability, and Transportation
- **Resource Gap:** Capital funding and additional staff capacity are required to implement comprehensive stormwater measures. Operational funds are needed to maintain current and future stormwater infrastructure.
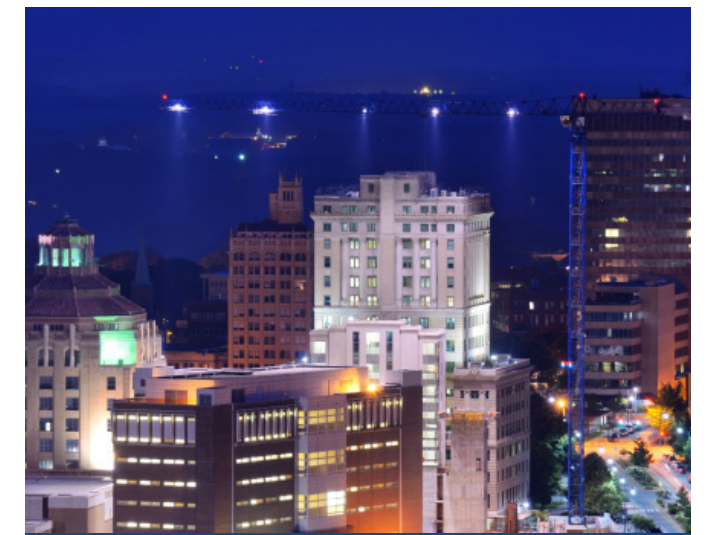
### Funding $$$$

Funding for this activity is currently attributed from the General Fund/operating budget, CIP and debt obligations, Stormwater Enterprise Fund and grants and governmental incentives. Current levels of funding are not sufficient to implement this activity.
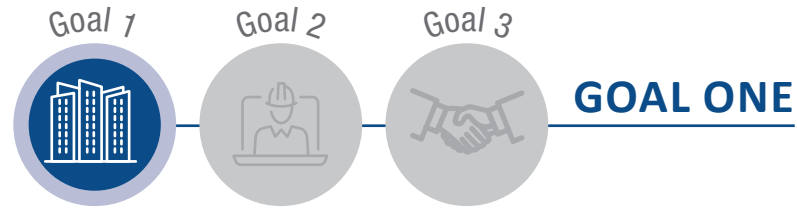
### Implementation Timeframe Short



*Downtown Asheville - By Sean Pavone*

Goal 1  Goal 2  Goal 3

## GOAL ONE

**11. Assess and Enhance Efficiency and Resilience of Municipal Water Distribution System**

Assessing the City's water distribution system will establish an energy use baseline to track progress toward goals and to identify opportunities for renewable energy and increased energy efficiency. The City's Non-Revenue Water program currently looks at opportunities for reductions in water loss in the distribution system. The recent investment in advanced metering infrastructure will help identify areas of water loss and increase the efficacy of this program not only to conserve water, but also to reduce energy used to convey and treat water that is lost.

Expanding efforts to increase the system's energy efficiency by implementing this activity should improve the sustainability and resilience of the City's distribution system. The City will utilize historical data to establish a baseline for energy consumption of the water distribution system. The baseline will be used to establish an energy efficiency goal which will be incorporated into the ISO 14001 Environmental Management System.

An assessment will be performed to identify opportunities for equipment energy efficiency upgrades or repairs and renewable energy powered pump stations.

This activity and the Non-Water Revenue program will work in concert to make the water system more resilient and reduce the carbon emissions through greater energy efficiency, conservation of energy previously used to convey and treat lost water, and the use of renewable energy.

The City water distribution system experienced a major service disruption in 2022 due to extreme cold temperatures. Additional assessments will be conducted to evaluate the water distribution systems ability to withstand and recover from climate related events and appropriate investments to minimize the loss of critical function due to adverse events such as flooding, drought, extreme temperatures, or wildfile.

**Operational Resources**

◈ **Lead Implementers:** Water Resources

◈ **Supporting Departments:** Sustainability

◈ **Resource Gap:** None identified at this time

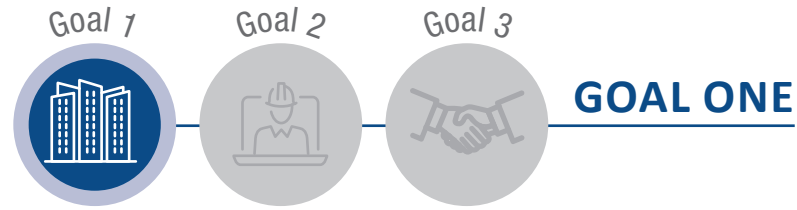**Funding**  $$-$$$$

This activity will utilize funding from the Water Resources Capital Fund. Implementation strategies identified through this activity may require additional funding from other sources. Depending on the recommended actions the General Fund/operating budget, grants and governmental incentives may be applicable.

**Implementation Timeframe**  Short



*Buildings Reflecting in Water Fountain in Asheville - By Derek Olson Photography*

Goal 1   Goal 2   Goal 3

# GOAL ONE

### Focus Area 1.3: Decarbonize Fleet Vehicles and Fleet Operations

In the United States, transportation accounted for almost 40% of total carbon dioxide ($CO_2$) emissions,[18] and Asheville is no exception. In 2019, 41.5% of the City's carbon dioxide equivalent ($CO_2e$) emissions came from freight and passenger vehicles.[19] This presents a significant opportunity for the City to reduce its emissions by decarbonizing both its municipal and transit fleets through vehicle electrification, route optimization, or other transportation-related carbon reduction efforts. The decarbonization strategies included in this focus area encompass both sides of the City's vehicle fleet: municipally owned and used vehicles as well as the transit fleet of buses owned and operated by the City and used by residents.

## ACTIVITIES

### 12.  Utilize Green Fleet Policy for Fleet Electrification

Municipal fleet electrification is a direct and highly visible route to reducing a City's overall emissions with important tie-ins to sustainability, improving air quality, and climate mitigation. This activity encompasses a technical assessment, pilot implementation, funding identification, and, as necessary, the revision of the Sustainable Fleet Policy to address assessment and pilot findings.

The goal of the pilot will be to understand the practical, financial and operational implications of vehicle electrification as it relates to the City's fleet that should be addressed when full-scale fleet electrification is implemented. As such, this strategy will require broad collaboration by departments across the City to achieve its full potential.

The City should first assess the current on-road and passenger municipal fleet to determine feasible vehicle replacement options, duty-cycles and charging requirements, vehicle use and garaging locations, charging and electric utility infrastructure needs, impacts to staff, and necessary maintenance of infrastructure, equipment, and vehicles.

This fleet assessment will include vehicle usage metrics, frequency of use, and vehicle categorization.
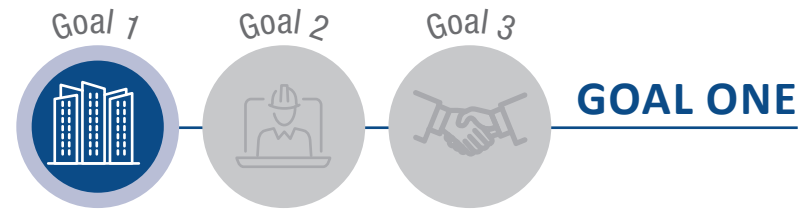
The assessment will be conducted by City staff, if capacity is secured, or by outside consultants. Concurrently, City staff or its consultant will explore current federal and other funding opportunities to support electric vehicle options, infrastructure, and related costs identified through the assessment, including pilot opportunities. A financial assessment will be performed to determine if the vehicle replacement fund is adequate to transition to an electric fleet. The City's budget and capital planning activities should address the financial needs of vehicle electrification as identified in the fleet assessment.

Based on the results of the fleet assessment, the City will conduct a municipal fleet electrification pilot to gather information and assess effective practices. The City will convene a workgroup consisting of a cross section of fleet vehicle users and support staff including maintenance, facilities, procurement, finance, and management staff. The workgroup will identify, based upon the fleet assessment, the vehicle types and number of vehicles, charging locations, and charging equipment, including software, to include in the pilot.

The pilot should be designed to collect data and information necessary to refine the strategy for charging equipment, vehicles, and charging locations; to better understand maintenance needs of charging equipment and vehicles; and to educate employees about vehicle electrification, electric vehicles, and charging. As pilot data and information is gathered and at the conclusion of the pilot the workgroup should provide information and recommendations to inform budget and capital planning activities. Recommendations should also include any needed revisions to the green fleet policy necessary for the implementation of a long-term fleet electrification/decarbonization program and fleet replacement capital plan for the City's light-medium duty fleet to achieve alignment with City goals.

Prior to investment in infrastructure based upon the fleet assessment and pilot, the City should consider its relocation plans for departments which could impact where fleet vehicles are parked.

Major infrastructure investment should be delayed until pending decisions relating to the long-term location of key departments, such as Public Works, are made.

Goal 1   Goal 2   Goal 3

**GOAL ONE**

Activity 12, Utilize Green Fleet Policy for Fleet Electrification, continued:
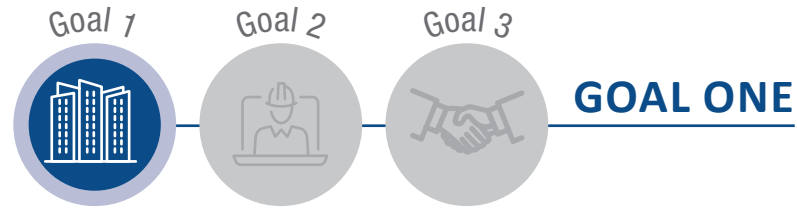
**Operational Resources**

◈ **Lead Implementers:** Public Works (Fleet Services)

◈ **Supporting Departments:** Capital Projects, Finance and Management, and Sustainability

◈ **Resource Gap:** Operational funding to procure fleet management software and to increase staff capacity and technical expertise. The need for capital funding is also anticipated to increase based on assessment results.

**Funding**   $-$$$$

Funding for this activity will come from a variety of sources ranging from the General Fund/operating budget, CIP, debt obligations, grants and governmental incentives.

**Implementation Timeframe**   Short

Goal 1  Goal 2  Goal 3

## GOAL ONE

### 13. Conduct Low-Carbon Transit Assessment

Just as with municipal fleet electrification, decarbonization of the City's transit fleet is an important component of reducing the City's emissions and meeting carbon reduction goals. By electrifying the transit fleet or reducing emissions through low-carbon fuels or route optimization the City will reduce its own emissions and reduce the carbon footprint of its residents who rely on City transit for mobility. Reducing emissions from these vehicles will also clean the local air of particulates and other pollutants that result from traditional diesel-fueled buses, improving air quality for City residents.

As part of the joint Transit Master Plan being conducted with Buncombe County in Fiscal Year 2024, the City will conduct an analysis to inform low carbon transit system transition planning. The primary purpose of the master planning effort will be to assess current transit offerings, identify opportunities for improving service and efficiency and to develop a long-term plan for system improvements.

The scope of work will include the development of a comprehensive financial plan for operational needs as well as fleet and facility requirements to support the transit system as it grows. The assessment will identify opportunities and resource gaps for the transit system overall along with the financial feasibility, strategies and challenges of a transition to a low carbon transit system.

The analysis will be utilized to inform budget, capacity and infrastructure needs to expand transit decarbonization.

### Operational Resources

- ◈ **Lead Implementers:** Transportation
- ◈ **Supporting Departments:** Capital Projects, Communication and Public Engagement, Finance and Management (Purchasing and Contracting), and Sustainability

- ◈ **Resource Gap:** Access to reliable vehicles that serve operations needs (bus length and battery range compatible with transit system and local environment), capital funds to invest in assets and infrastructure, and operating funds to maintain fleet and comply with Transit Master Plan

### Funding   $-$$$$

While funding of this activity will vary from assessment ($) to implementation ($$$$), current levels of funding are not adequate. To date the Transportation Department has been very successful at utilizing the Federal Transit Administration funding but it is still not sufficient to meet the City's current and future expansion needs. Other funding in addition to capital, grants and governmental incentives will be required.

### Implementation Timeframe   Medium

Goal 2 demonstrates the City's long-term commitment to sustainability by integrating climate priorities into the foundations of City operations. Continued action on climate mitigation and climate justice will come from bringing sustainability and climate priorities into every aspect of the City's decision making and planning processes. This goal focuses on embedding sustainability and climate considerations into City processes by re-working internal guidelines, baselines, and success metrics. The activities in this goal focus on data-driven development or improvement of tools and resources to support staff in incorporating sustainability and climate considerations throughout the organization.

# Goal 2

## Sustainability and Climate Priorities Are Embedded In City Operations, Participation, and Decision Making

### Focus Areas

**Focus Area 2.1:** Embed Sustainability, Resilience, and Equity in Decision-Making and Planning

**Focus Area 2.2:** Identify Opportunities to Reduce Waste Generation and Improve Diversion



*Buncombe County Courthouse - By Jon Bilous*

Goal 1    Goal 2    Goal 3

# GOAL TWO

**Focus Area 2.1: Embed Sustainability, Resilience, and Equity in Decision-Making and Planning**

This focus area includes activities that will codify sustainability, resilience, and equity strategies into the decision-making tools and processes of the City.

## ACTIVITIES

**14.  Use Climate Justice and Sustainability Tools for Planning and Decision Making**

The City of Asheville's community-driven Climate Justice Initiative works with BIPOC and frontline communities to explore and define concepts of climate equity, justice, and resilience and to hear and share concerns about the realities of the climate crisis in Asheville's most impacted communities. Key terms, definitions and tools have been developed to support thoughtful consideration and incorporation of climate justice in all major projects, proposals, budget decisions, resource allocation, and policy development. Tools, such as the Climate Justice Data Map, Screening Tool, and Screening Tool Guide complement the GARE Racial Equity Toolkit [20] and Equity Action Plan.

City staff should employ multiple tools together to maximize impact and to deepen considerations of climate justice in project planning and implementation.

To support effective use of the Climate Justice Tools, the Sustainability and of Equity and Inclusion Departments should identify strategies to improve cross departmental processes and collaborative opportunities. In using the tools, staff should communicate feedback and request guidance from Sustainability or Equity and Inclusion staff. Citywide staff should closely coordinate and frequently communicate with Sustainability or Equity and Inclusion to identify tool improvements to increase impact, improve applicability to all departments, and reflect community needs. Sustainability and Equity and Inclusion Departments should regularly review feedback and engage frontline communities to ensure that the Tools remain up to date with climate threat and non-climate stressor data, alongside community definitions, priorities and climate concerns. During review periods, the City should develop and share case studies of how Tools have impacted planning and decision-making.
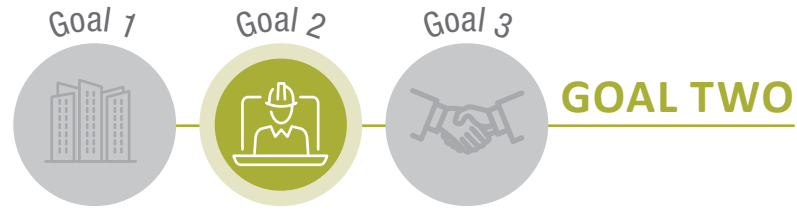
**Operational Resources**

◈ **Lead Implementers:** Equity and Inclusion and Sustainability
◈ **Supporting Departments:** All departments and divisions
◈ **Resource Gap:** None identified at this time

**Funding**    $

Additional technical support to maintain existing tools (such as the Climate Justice Map) or to develop new ones may be required and will most likely be funded through the General Fund/operating budget or grants.

**Implementation Timeframe**    **Ongoing**

Goal 1    Goal 2    Goal 3

## GOAL TWO

**15. Monitor and Engage in State-Level and Utility Policies on Climate and Sustainability**

To take advantage of resources that can contribute to City renewable energy, climate, and resilience priorities, the City will dedicate staff time and resources to monitoring and engaging in policy, regulatory, and programmatic discussions and activities at the state and utility level. Integrating sustainability goals and ideologies not only into City operations but also into state and utility conversations, programs, and policies will broaden the scope of sustainability initiatives and maximize the opportunities to meet climate and sustainability targets. This activity will promote climate mitigation by working with the state and utility providers to implement climate conscious initiatives around waste reduction, stormwater, energy efficiency, and renewable energy. This activity also contributes to climate adaptation by tapping into utility resources to develop a more resilient grid and state policies and programs to promote widespread resiliency in energy, water, and infrastructure.

The activity requires dedicated staff time and resources to participate in conversations alongside other municipalities, with utility and state leaders, and organizations to advance climate goals. Staff need to be well versed on City sustainability policies

as well as state and utilities processes, policies, programs, and activities. Additionally, staff need to be connected with the appropriate teams and collaborators at the relevant utility and state departments, as well as those of entities with similar interests, in order to have a valuable impact.

Time needs to be budgeted for these City staff to regularly work with these teams and identify areas of potential collaboration in meeting sustainability goals.

### Operational Resources

◈ **Lead Implementers:** Sustainability

◈ **Supporting Departments:** Legal
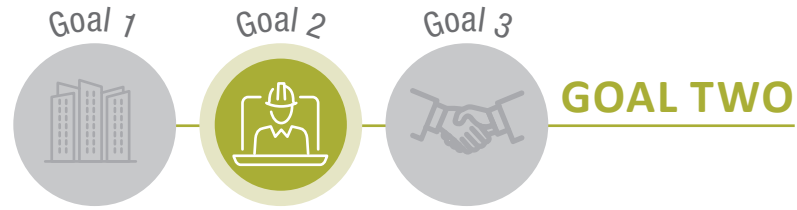
◈ **Resource Gap:** None identified at this time

### Funding $

This activity is funded from the General Fund/operating budget. In addition to current staff capacity, technical expertise may occasionally be needed to assist in engagement.

### Implementation Timeframe    Ongoing

*Buncombe County Courthouse and City Hall Buildings, Asheville - By Henryk Sadura*

Goal 1    Goal 2    Goal 3

## GOAL TWO

**Focus Area 2.2: Identify Opportunities to Reduce Waste Generation and Improve Diversion**

In order to bring sustainability and climate action to all City operations this focus area identifies waste diversion strategies for City operations and facilities that reduce the amount of waste produced and ensure that waste is disposed of sustainably and responsibility.

## ACTIVITIES

**16.  Establish Sustainability Oriented Procurement Procedures**

The City will establish a sustainable procurement SOP to prioritize the procurement of goods that reduce greenhouse gas emissions across the supply chain, prevent or reduce exposure to dangerous chemicals, and/or use sustainable products. In addition to this SOP, the City should provide technical assistance, tools, training, and resources to all departments to ease procurement in alignment with sustainability goals. Procurement tools can also include a list of approved product types that have been reviewed and align with the City's sustainability goals as well and identify vendors that operate in a sustainable manner. The procurement SOP will complement, not conflict, with the Asheville Business Inclusion Policy. By developing a procurement SOP that centers sustainable suppliers who are conscious of packaging and other forms of unnecessary waste, the City ultimately decrease its overall waste generation.

The procurement procedure will be developed through collaboration between the Finance and Management Services (Purchasing Division) and Sustainability Departments to ensure compliance with statutory regulations, accurate representation of sustainability goals and policies, and realistic implementation opportunities.

Sustainability will partner with all other departments to understand their needs and identify what resources would be required to make sustainable procurement choices. In addition to the SOP, other outputs from this activity may include developing a guide to purchasing environmentally friendly cleaning and office supply products as well as a dos and don'ts guide for procurement card holders.
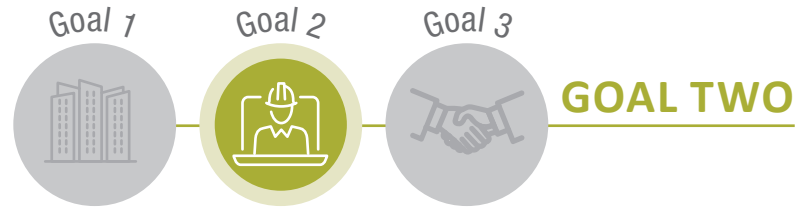
**Operational Resources**

◈ **Lead Implementers:** Finance and Management Services and Sustainability

◈ **Supporting Departments:** All departments and divisions

◈ **Resource Gap:** To fully implement this activity additional staff capacity in Sustainability and Finance and Management Services due to the diverse technical nature of products purchased by the City.

**Funding**    $

While funding of this activity is relatively low, it will be an ongoing expense from the General Fund/operating budget as it requires addition of staff.

**Implementation Timeframe**    Long

Goal 1   Goal 2   Goal 3

## GOAL TWO

### 17. Conduct Solid Waste Master Planning Process

As part of a broader city-wide solid waste master planning process, the City should conduct a study of municipal operations and develop a City facility waste management plan. This plan will help the City understand their municipal waste baseline, set waste diversion goals, and chart the path to meet those goals. The transportation, processing, and disposal of solid waste has significant greenhouse gas emissions and negative climate impacts.

Working to reduce the amount of waste that is produced at City facilities and the amount of waste that is sent to landfills will contribute to climate mitigation by reducing solid waste related emissions. Developing a plan based on well researched baseline information will help the City set and achieve measurable goals that will then be reported out to indicate progress.

To develop an informed plan, the City will start by gathering data on current waste production metrics and diversion practices for Asheville operations. This data will be used to establish a baseline. This will require staff and/or contractor time and resources.

The City will then develop targets and timelines based on the understood baseline and existing best practices in facility waste management. Meeting these waste diversion goals will rely heavily on the day-to-day practices of City staff. In order to increase staff participation in recycling and compost programs, the City needs to implement a robust system of education, training, signage, and incentives for participation.

The plan should be developed with input from staff across City departments to increase staff buy-in and ensure that teams are given the resources they need to meet these goals.

### Operational Resources

◈ **Lead Implementers:** Public Works (Sanitation Division)
◈ **Supporting Departments:** Sustainability
◈ **Resource Gap:** Funding for the planning process and additional staff capacity to assist in gathering data for baseline and implementation of recommendations is needed.

### Funding    $$-$$$$

Funding of this activity will vary from master planning ($$) from the General Fund/operating budget to implementation ($$$$) which will be a mix of Capital and General Fund/operating budget.

### Implementation Timeframe    Short

# Goal 3

**The City Supports Sustainability and Resilience For Area Residents and Businesses**
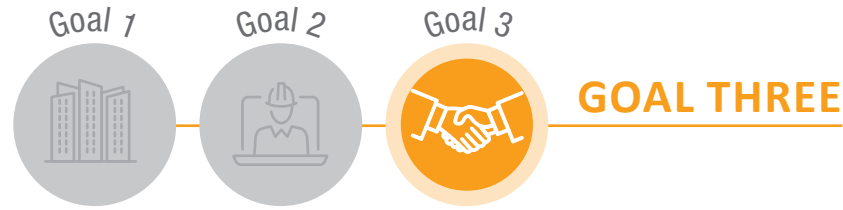
## Focus Areas

**Focus Area 3.1:** Collaborate on and Support Community-Based Solutions and Infrastructure Improvements to Prevent, Withstand, and Recover From Disruptions.

**Focus Area 3.2:** Facilitate Inclusive Sustainability, Climate, and Resilience Communications, Education, and Outreach

By pursuing MCAP activities, the City has the opportunity to integrate sustainability into policies and operations and to be an example for the wider community demonstrating how area residents and businesses can adopt sustainable practices. Positioning the organization as a leader and an example, the City should also work with the community to create initiatives that guide and support widespread sustainability action. Resilient cities improve quality of life for all residents and businesses. The actions in this goal will work to maximize benefits felt on the community level from the City's internal sustainability initiatives.



*Asheville Skyline Aerial - By Kevin Ruck*

Goal 1  Goal 2  Goal 3

## GOAL THREE

**Focus Area 3.1: Collaborate On and Support Community-Based Solutions and Infrastructure Improvements to Prevent, Withstand, and Recover From Disruptions**

Infrastructure, programs, and other investments are most successful when their development is informed by the needs and interests of the communities that will use them every day.

This focus area will center community impact and feedback in developing infrastructure solutions that both improve people's lives in the short term and prepare the City for climate events in the long term.

## ACTIVITIES

**18. Utilize Urban Forestry Practices on City Land in Priority Neighborhoods to Reduce Heat Island Impacts and Sequester Carbon**

During the Climate Justice Initiative, City staff found that heat islands and low tree coverage areas align with historically BIPOC or low-income neighborhoods. [21] Equitably expanding tree coverage through urban forestry projects on City-owned land, with a prioritizing of low tree coverage areas, can impact air quality, carbon sequestration, heat vulnerability, stormwater runoff and quality of life.

Areas without adequate tree coverage are susceptible to heat island effects, this includes higher daytime temperatures, reduced nighttime cooling, and higher air-pollution levels. This can in turn contribute to heat and air quality related health issues for residents of these areas. Planting trees also reduces stormwater runoff and improves water quality by absorbing and infiltrating the water. Equitable investment that prioritizes urban forestry projects in heat vulnerable neighborhoods is critical to mitigate heat vulnerability and flood risks in all Asheville neighborhoods. Additionally, trees take in carbon and produce oxygen. Increasing the number of trees on City land will sequester carbon and help mitigate climate change.

The City's tree canopy ordinance was adopted in 2020 to combat a 6.4% tree canopy reduction between 2008 and 2018. [22] The ordinance outlines specifications for tree coverage and type and requires developers to replace trees that have been removed through development. However, the ordinance does not include equity considerations for tree coverage in heat vulnerable neighborhoods. The City has taken steps to identify heat vulnerable neighborhoods by including a heat vulnerability index (HVI) score in its Climate Justice Map. The HVI takes into account land surface temperature, tree cover, age, and poverty.

The City should take a three-pronged approach that is both data and community driven to increase tree coverage on City-owned property in communities with high-heat vulnerability:

◈ Conduct outreach to gather community input to identify priority locations for tree planting.

◈ Use the HVI scores from its Climate Justice Map alongside site analysis for suitability to identify neighborhoods within tiered prioritization categories based on HVI percentile groups followed by a survey of priority neighborhoods by the City's Urban Forester and Arborist to identify suitable sites for tree planting.

◈ Establish tree planting standards for City property, particularly City-owned rights-of-way, to ensure maximum potential for healthy trees.
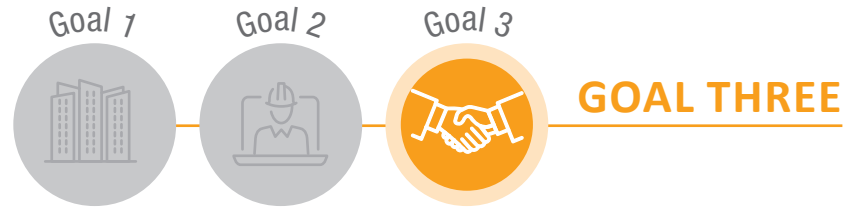
The City should use the community input, tiered prioritization and siting, and planting standards to ensure that investments in quality urban forestry projects are prioritized in the areas of greatest need.

These projects should, at minimum, bring the City-owned land within compliance of the tree canopy ordinance; however, there are additional opportunities which the City may wish to explore which can provide additional climate benefits:

◈ Amend the tree canopy ordinance to include requirements for increased tree canopy coverage in heat vulnerable neighborhoods to increase the impact of urban forestry projects in areas of greatest need.

◈ Set a target to complete a specific number of high priority projects each budget cycle using funding gathered from the payments made in lieu of compliance with the Tree Canopy Preservation Ordinance [23] or other funds.

◈ Establish community partnerships to support community outreach and tree planting.

◈ Establish a tree nursery, to ensure adequate tree stock to meet planting needs.

### Operational Resources

◈ **Lead Implementers:** Capital Projects, Development Services, and Public Works

◈ **Supporting Departments:** Parks and Recreation, Planning and Urban Design, and Sustainability

◈ **Resource Gap:** None identified at this time

Goal 1    Goal 2    Goal 3

## GOAL THREE

Activity 18, Utilize Urban Forestry Practices on City Land in Priority Neighborhoods to Reduce Heat Island Impacts and Sequester Carbon, continued:

**Funding** $$

Funding for this activity will primarily come from the General Fund/operating budget or the Tree Fee in-Lieu of Compliance Fund. As this data driven approach is implemented funding needs may be identified such as maintenance of tree canopy.

**Implementation Timeframe** Short

### 19. Explore City Supported Community Resilience Hub Sites

Resilience hubs offer a centralized location where community members can go before, after, or during natural disasters, weather-related events, or man-made disasters or disruptions. The creation and operation of community resilience hubs will allow residents to receive resilience information, resources, and services. Hubs are often located in areas with underserved or vulnerable populations.

They can serve as centralized locations for community education on methods to increase personal or community resiliency. Educational offerings could include extreme weather preparedness, or methods to reduce carbon emissions such as energy efficiency or the benefits of installing renewable energy sources. Those that utilize or provide distributed energy resources, microgrids, electric vehicle charging, or micromobility access such as bike, e-bike, or scooter rentals, can demonstrate the efficacy of such technology as part of their educational programming.

Resilience hubs can also provide opportunities for residents to withstand and recover from natural disasters or weather events by serving as warming and cooling centers, providing device charging and wi-fi during power outages, or serving as a central location for the dissemination of information, food, or supplies during disruptions.

It is likely that, at least initially, City staff will be a convener and driver of the process to explore hub concepts and develop programming. As hubs are developed and established, the City will provide a variety of support for the hub host such as funding, administrative support, program development, educational resources and/or staffing.

To begin this activity, the City will engage community members, organizations, and potential partners to identify community needs and potential locations for resilience hubs.

The Climate Justice Map can also be used as a starting point for discussion about community needs, or to supplement the information provided by community members. Hubs can be located in City facilities but are often located in known, trusted community gathering locations. Integrating resilience hubs into the programming of established institutions capitalizes on the trust local communities already have with the host organization, thus increasing the potential to reach more residents. As potential locations and host organizations are identified, community needs and programming to address those needs should be identified.

Programming or features of the hub, such as those previously described, should be tailored to the needs of the community and available resources. Offerings will be phased in at one or multiple resilience hubs as resources become available. Potential partners may provide access to resources, information, and additional community resilience insights.

These potential partners could include: local utilities, state agencies, environmental organizations, faith-based organizations, educational institutions, and community organizations or agencies that provide services to underserved and vulnerable communities.

**Operational Resources**

◈ **Lead Implementers:** Communication and Public Engagement, Parks and Recreation, and Sustainability

◈ **Supporting Departments:** Capital Projects and Fire

◈ **Resource Gap:** None identified at this time

**Funding** $$-$$$$

Exploration of resilience hubs will utilize existing staff capacity that is funded through the General Fund/operating budget. If a project is identified, capital funds or grants, and governmental incentives may be applicable.
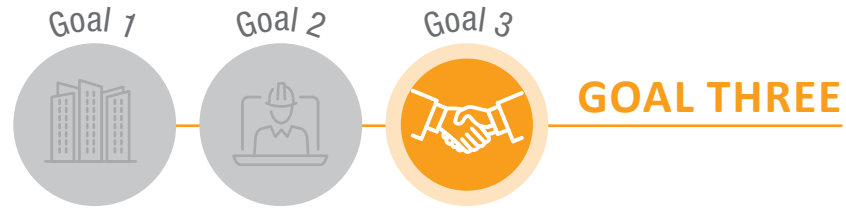
**Implementation Timeframe** Medium

Goal 1  Goal 2  Goal 3

## GOAL THREE

### 20. Conduct Programs for Food Production, Community Gardening, and Edible Plantings on Public Lands

The City will continue to offer Asheville Edibles programs including edible parks, community and pollinator gardens and educational opportunities to the community. Gardens and edible parks reduce food insecurity in the community and provide more equitable access to fresh produce in urban areas. Increasing plant life in urban areas through parks, gardens, and protected lands helps to capture carbon and mitigate climate impacts. Green space can also collect stormwater to reduce runoff and improve air quality for residents. Outdoor education relating to these shared spaces can also increase community interest in sustainability and climate justice and increase community buy-in to continued City sustainability efforts.

The City will continue to implement its food production and education programs to promote and support urban Agriculture. Through the Asheville Edibles  program, qualified individuals, businesses, or nonprofit organizations can utilize City-owned land to grow and maintain pollinator habitats and food products.

The City shares information about these programs as well as general food production educational information through community collaborations, on its website and at production sites. The City is in the process of updating the Asheville Edibles Map, which will show planting locations.

**Operational Resources**

◈ **Lead Implementers:** Sustainability

◈ **Supporting Departments:** Communication and Public Engagement, Parks and Recreation, and Planning and Urban Design
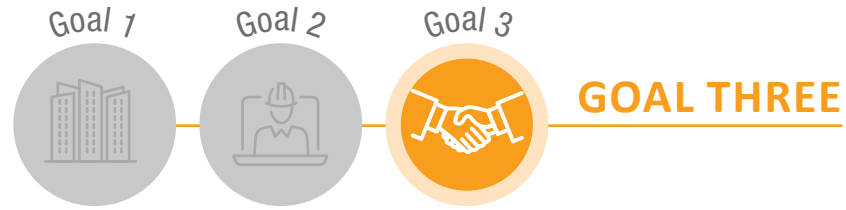
◈ **Resource Gap:** None identified at this time

**Funding** $

Funding of this activity is provided through the General Fund/operating budget.

**Implementation Timeframe** Ongoing

*Asheville Downtown Skyline at Dusk - By Sean Pavone*

Goal 1   Goal 2   Goal 3

## GOAL THREE

**Focus Area 3.2: Facilitate Inclusive Sustainability, Climate, and Resilience Communications, Education, and Outreach**

Successful City initiatives prioritize accountability from the community they are meant to serve. To work towards equity and sustainability goals the City must include the community in decisions making and be transparent with the community throughout the process. This focus area provides opportunities for transparency in reporting progress and additional opportunities for community engagement directly tied to sustainability and climate matters.

## ACTIVITIES

**21.  Make Climate and Sustainability-Related Data and Progress Towards Goals Publicly Accessible**

During the implementation of the MCAP it is important for the City to track key performance measures and monitor progress on sustainability and climate change adaptation and mitigation. These performance measures will be used both to monitor progress internally as well as to share as part of the City's regular performance and strategic progress reporting.

Monitoring progress internally should help the City identify areas for improvement or further investment. Likewise, monitoring progress will help the City identify areas that are performing well that should continue. Sharing progress externally will build community trust, education, and interest. Additionally, sharing sustainability and climate progress can allow the City to serve as an example for residents, businesses, and other communities and encourage them to also take action. It also demonstrates success and progress necessary for recognition, some certifications, and funding opportunities.

Initial specific performance measures, organized by goal, are included in the **Tracking Progress** chapter of this MCAP. During implementation, the City will identify data necessary to monitor and track MCAP progress and, as needed, initiate processes to capture or collect data not currently available. The City will determine which measures should be shared externally as part of the City's regular progress reporting and how to use them internally to support progress.

Staff time and resources are needed to collect and maintain performance measure data and communicate sustainability and climate progress publicly through accessible language and media.
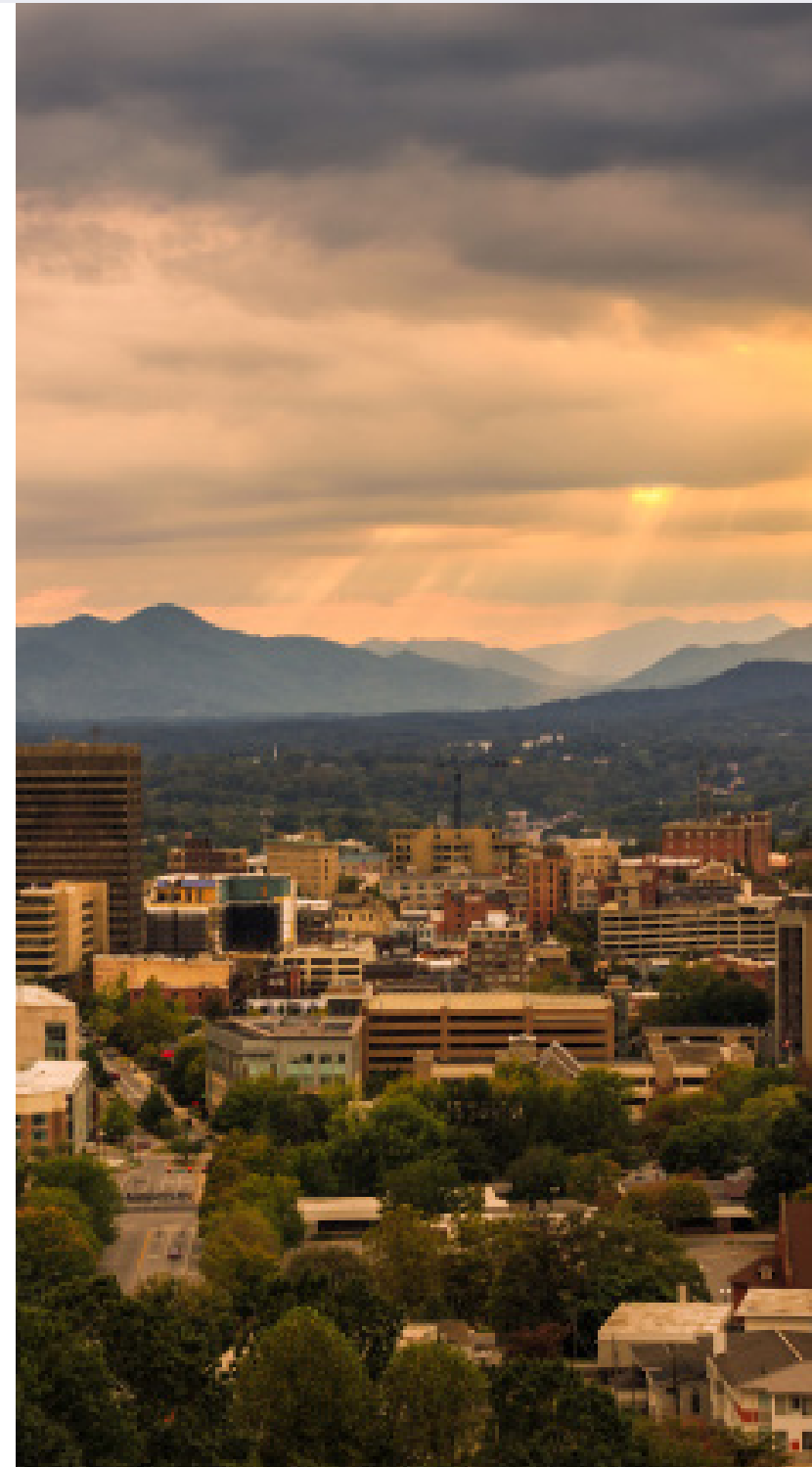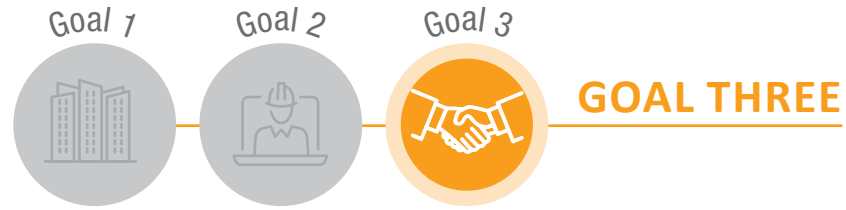
### Operational Resources

- **Lead Implementers:** Finance and Management Services (Office of Data and Performance) and Sustainability
- **Supporting Departments:** Communications and Public Engagement and Information Technology Services
- **Resource Gap:** Staff capacity, turnover, and vacancies may impact data collection, availability, and analysis required to maintain this activity.

### Funding  $

Funding is for various technologies to track data as well as staff time to collect and analyze. This funding is supplied through the General Fund/ operating budget

### Implementation Timeframe   Short

*Sunset Over Asheville - By Zak Zeinert*

35

Goal 1  Goal 2  Goal 3

## GOAL THREE

**22.  Create a Sustainability and Climate Ambassador Program to Regularly Engage Frontline Communities**

A strategy identified by community leaders through the Climate Justice Initiative was to effectively engage frontline communities. The Climate Justice Initiative states that this strategy can "Address the divisions between the City and BIPOC communities that exist due to a history of structural racism which, ultimately, exacerbate the impacts of climate change and create breakdowns in the communication of critical information about the issue." [24] To contribute to effectively engaging frontline communities on climate and sustainability topics, the City will create a Climate Ambassador Program to increase representation of frontline voices in sustainability and climate decision-making.

The Climate Ambassadors Program would also enable mutual education opportunities between the City and community members about sustainability, climate, and climate justice topics.

To develop the program, the City will first conduct community outreach to gauge interest and identify potential candidates for the Climate Ambassador Program.

Climate Ambassadors should include Asheville residents who represent a range of racial, cultural, linguistic, and socio-economic backgrounds.

The program may include payments to the Ambassadors as compensation for the work they are doing for the City and their community. Once the City establishes the group of Climate Ambassadors, the City and Ambassadors will collaboratively review the goals of the Climate Ambassador Program and develop initiatives to advance the goals.

To ensure the Ambassadors are prepared, the City will also provide sustainability and climate training for the Ambassadors.

### Operational Resources

◈ **Lead Implementers:** Community and Public Engagement and Sustainability

◈ **Supporting Departments:** Equity and Inclusion

◈ **Resource Gap:** None identified at this time

### Funding $

Initial funding of this activity will be supplied through the existing budget and staff capacity. Should a program be launched, program costs will need to be developed and secured.

### Implementation Timeframe Short

# Implementation

This MCAP includes priority activities that are aligned with the City's sustainability and climate goals. However, the City does not have capacity to implement all activities simultaneously. The MCAP positions the City to articulate plans, policies and programs while maintaining flexibility to remain nimble to take advantage of new information, resource opportunities or emerging synergies as they arise. Activities were divided into four categories: policies, plans, programs, and existing, ongoing activities. Consideration was given to how different activity types have different resource requirements.

**Policies:** The City has identified six foundational new policies and procedures that should be developed. The timing of these policies has been intentionally staggered to ensure that they capitalize on other existing activities and balance staff resources to optimize success in development and implementation. Implementation of the policies will follow their development as funds are allocated for staffing and capital exwpenditures.

**Plans:** For areas where additional strategy development is needed, a handful of planning activities are identified. To reserve resources for action, not all plans should be created at the same time. The proposed sequence prioritizes additional planning in areas most critical to meet stated goals and targets. Implementation of these plans will, again, follow the allocation of funds for implementation.

**Programs:** This category captures activities involving direct implementation or investments. It is proposed to first implement programs that are the most time, and resource intensive. In parallel, programs that advance equity in and transparency to communities should be the focus.

Existing, Ongoing Activities: Within this MCAP, there are three existing activities for which the City is proposing to continue investment on an ongoing basis. Continuation of these activities should continue on for the entirety of this plan's purview.

**Table 1** indicates which activities are policies, plans, programs, or existing and ongoing.

| TABLE 1: ACTIVITY TYPES | | | | |
|---|---|---|---|---|
| **POLICIES** | | | **PLANS** | |
| 3 | Expand Energy Efficiency Standards for All New Construction to Retrofits and Upgrades | 13 | Conduct Low-Carbon Transit Assessment | |
| 4 | Establish Building Energy Efficiency Operations and Maintenance Requirements | 17 | Conduct Solid Waste Master Planning Process | |
| 5 | Incorporate Equity and Sustainability into Processes to Address Aging Infrastructure | **EXISTING ONGOING ACTIVITIES** | | |
| 6 | Update City-Owned Building Standards for Resilience Considerations | 1 | Continue Installation of Renewable Energy Resources on Municipal Property | |
| 7 | Establish a Policy for the Purchase, Sale, or Adaptive Reuse of Highly Vulnerable or Underutilized Assets | 14 | Use Climate Justice and Sustainability Tools for Planning and Decision Making | |
| 16 | Establish Sustainable Oriented Procurement Procedures | 15 | Monitor and Engage in State-Level and Utility Policies on Climate and Sustainability | |
| | | 20 | Conduct Programs for Food Production, Community Gardening, and Edible Plantings on Public Lands | |
| **PROGRAMS** | | | | |
| 2 | Utilize Alternatives to On-Site Solar to Meet Targets | 12 | Utilize Green Fleet Policy for Fleet Electrification | |
| 8 | Investigate and Install Building Automation for All City Facilities | 18 | Utilize Urban Forestry Practices on City Land to Reduce Heat Island Impacts and Sequester Carbon | |
| 9 | Integrate Climate Justice, Equity, and Resilience Best Practices into All Hazards and Emergency Response | 19 | Explore City Supported Community Resilience Hub Sites | |
| 10 | Enhance Stormwater Control Measures for City-Owned Property | 21 | Make Climate and Sustainability-Related Data and Progress Towards Goals Publicly Accessible | |
| 11 | Assess and Enhance Efficiency and Resilience of Municipal Water Distribution System | 22 | Create a Sustainability and Climate Ambassador Program to Regularly Engage Frontline Communities | |

To support resource planning, sequencing of activities must take into consideration a variety of factors, including:

- ❖ The need to drive progress and results throughout implementation, balancing shorter term activities with longer, capital intensive projects
- ❖ The additional staff capacity needed to develop new plans, processes and policies prior to implementation alongside existing projects and priorities
- ❖ The CIP process and timeline
- ❖ The long-term nature of planning and implementing infrastructure projects
- ❖ Ensuring core services are maintained, improved and not disrupted

Detailed activity sequencing information is provided in **Table 2**. The initiation of planning and/or implementation of activities is designed to take into consideration the factors described above while also moving the City toward its climate and sustainability goals.

| TABLE 2: ACTIVITY SEQUENCING | | SHORT TERM | | MEDIUM TERM | | LONG TERM |
|---|---|---|---|---|---|---|
| ID | ACTIVITY | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 AND BEYOND |
| 1 | Continue Installation of Renewable Energy Resources on Municipal Property | ■ Existing Ongoing | ■ | ■ | ■ | ■ |
| 2 | Utilize Alternatives to On-Site Solar to Meet Targets | | | Planning | Implementation | Implementation |
| 3 | Expand Energy Efficiency Standards for All New Construction to Retrofits and Upgrades | | | | Simultaneous | Implementation |
| 4 | Establish Building Energy Efficiency Operations and Maintenance Requirements | | | Simultaneous | Simultaneous | Implementation |
| 5 | Incorporate Equity and Sustainability into Processes to Address Aging Infrastructure | Planning | Implementation | Implementation | Implementation | Implementation |
| 6 | Update City-Owned Building Standards for Resilience Considerations | | | Planning | Implementation | Implementation |
| 7 | Establish a Policy for the Purchase, Sale, or Adaptive Reuse of Highly Vulnerable or Underutilized Assets | Planning | Simultaneous | Simultaneous | Simultaneous | Simultaneous |
| 8 | Investigate and Install Building Automation for All City Facilities | | | Planning | Implementation | Implementation |
| 9 | Integrate Climate Justice, Equity, and Resilience Best Practices into All Hazards and Emergency Response | Planning | Simultaneous | Simultaneous | Simultaneous | Simultaneous |
| 10 | Enhance Stormwater Control Measures for City-Owned Property | Planning | Simultaneous | Simultaneous | Simultaneous | Simultaneous |
| 11 | Assess and Enhance Efficiency and Resilience of Municipal Water Distribution System | | | Planning | Implementation | Implementation |
| 12 | Utilize Green Fleet Policy for Fleet Electrification | Planning | Simultaneous | Simultaneous | Simultaneous | Simultaneous |
| 13 | Conduct Low-Carbon Transit Assessment | | | Planning | Planning | |
| 14 | Use Climate Justice and Sustainability Tools for Planning and Decision Making | ■ Existing Ongoing | ■ | ■ | ■ | ■ |
| 15 | Monitor and Engage in State-Level and Utility Policies on Climate and Sustainability | ■ Existing Ongoing | ■ | ■ | ■ | ■ |
| 16 | Establish Sustainable Oriented Procurement Procedures | | | | | Planning |
| 17 | Conduct Solid Waste Master Planning Process | Planning | Implementation | Implementation | Implementation | Implementation |
| 18 | Utilize Urban Forestry Practices on City Land to Reduce Heat Island Impacts and Sequester Carbon | Planning | Simultaneous | Simultaneous | Simultaneous | |
| 19 | Explore City Supported Community Resilience Hub Sites | | | Planning | Planning | Planning |
| 20 | Conduct Programs for Food Production, Community Gardening, and Edible Plantings on Public Lands | ■ Existing Ongoing | ■ | ■ | ■ | ■ |
| 21 | Make Climate and Sustainability-Related Data and Progress Towards Goals Publicly Accessible | Planning | Implementation | Implementation | Implementation | Implementation |
| 22 | Create a Sustainability and Climate Ambassador Program to Regularly Engage Frontline Communities | | | Planning | Implementation | Implementation |

LEGEND:

- Planning or Development
- Implementation
- Simultaneous Planning/ Development and Implementation
  *(Some action or policy currently exists, but will be expanded, updated, or piloted during this time.)*
- Existing Ongoing Activities

# Funding Models

MCAP activities will be funded through a combination of funding models. Available City resources include both the operating and capital budgets. Other funding from partnerships and grant opportunities may also exist.

## General Fund/Operating Budget

Asheville's General Fund is one of the best suited options to finance many of the MCAP activities. The General Fund is the chief operating fund of the City and is the most appropriate financing source for City-wide initiatives, including both operating and capital activities. Activities that include policy and plan development or changes to programs and services would likely be funded through General Fund operating budgets. Certain activities associated with business-like city operations (e.g., water, stormwater, parking) would be funded through enterprise funds and operating budgets associated with those services.

Currently, most sustainability related initiatives are funded by the General Fund. The City has instituted a green savings program that provides a mechanism for operating savings generated by energy-reducing investments in the City's streetlighting program to be captured and utilized to fund future investments.

## Capital Improvement Program and Debt Obligations

The City has a five-year CIP that funds infrastructure improvements, facility construction, and facilities maintenance.

In order to be included in the CIP, a project must be greater than $50,000 and have a useful life of at least one year. Most projects in the CIP are funded by debt obligations that are paid for through the City's General Fund budget. The City has issued general obligation, special obligation, and limited obligation bonds for the costs of construction associated with larger capital projects such as facilities and infrastructure. Additionally, the City utilizes short-term installment debt to fund vehicle and equipment purchases. The City should explore debt obligations of these types to determine whether they would be suitable given the City's debt authorization and capacity, credit rating impacts, transaction costs, and cash flows available for repayment.

## Grants and Governmental Incentives

Grants and incentives will be explored for a number of MCAP activities. Recent federal legislation such as the Infrastructure Investment and Jobs Act (2021) (IIJA) and the Inflation Reduction Act (2022) (IRA) have provided new and expanding opportunities for climate and resilience funding.

The IIJA in particular has opened and expanded grant programs that are available to communities directly from the federal government and through state administered programs that pass-through federal funds to grant recipients, while the IRA has made certain tax incentives available to municipal entities. In addition to state and federal grants and incentives, utility rebates or other incentives may be available to fund some activities.

## Public Private Partnerships

Another funding model which may be available to the City for MCAP activities is a Public Private Partnership (P3). Through these partnerships, which can take many different forms, a contractual agreement is made between a public body and private entity in which the private entity finances, constructs, and often operates a capital asset that provides services to residents and is paid to do so by the public body. For example, the City could explore a P3 with a developer or investor who finances the construction of solar installations on City property. The developer owns and operates the assets and then sells power to the City through a long-term power purchase agreement. P3s are complex arrangements with many legal and tax requirements that would need to be thoroughly explored.

# Tracking Progress

This MCAP is built upon three driving goals that the City will advance through implementing activities outlined in this document. It is critical that the City track progress towards these three goals to monitor sustainability and climate action performance. Through periodic review of performance, the City should identify areas for improvement to adjust its strategy as needed. The City will use the following performance measures to track progress towards sustainability and climate goals:

### Goal 1: City-Owned Assets Are Resilient, Sustainable, and Efficient

- Carbon emission reduction from a FY 2009-2010 baseline.
- Reduction in the number of City facility or infrastructure closures due to flooding, extreme temperatures, wildfires, or landslides over baseline.

### Goal 2: Sustainability and Climate Priorities Are Embedded in City Operations, Participation, and Decision Making

- Funds allocated through the operating and CIP budgets for sustainability and climate related projects.
- Number of projects planned or implemented with a sustainability lens.

### Goal 3: The City Supports Sustainability and Resilience for Area Residents and Businesses

- Number of trees preserved, planted, or paid annually through compliance with the Tree Canopy Ordinance.
- Increase in the number of edible and pollinator sites included on the Asheville Edibles Map.

*Downtown Skyline at Dusk - By Sean Pavone*

# Appendices

## Appendix A: Summary of Sustainability and Climate Activities

| TABLE 3: SUMMARY OF SUSTAINABILITY AND CLIMATE ACTIVITIES | | | | | | | |
|---|---|---|---|---|---|---|---|
| ID | Activity | Lead Implementers | Supporting Departments | Implementation Timeframe | Funding | Resource Gap | Activity Type |
| 1 | Continue Installation of Renewable Energy Resources on Municipal Property | ❖ Capital Projects | ❖ Sustainability | Ongoing | $$$$ | ❖ Staff Capacity<br>❖ Capital funding<br>❖ Capital roof replacement funding | Climate mitigation |
| 2 | Utilize Alternatives to On-Site Solar to Meet Targets | ❖ Finance and Management Services<br>❖ Sustainability | ❖ Communication and Public Engagement<br>❖ Community and Economic Development<br>❖ Legal | Medium: 3-5 years | $ - $$$$ | ❖ Operational funding<br>❖ Capital funding<br>❖ Dedicated funding source<br>❖ Procurement program approved by the NC Utility Commission | Climate mitigation |
| 3 | Expand Energy Efficiency Standards for All New Construction to Retrofits and Upgrades | ❖ Capital Projects<br>❖ Sustainability | ❖ Finance and Management Services | Medium: 3-5 years | $ - $$$$ | ❖ Capital funding<br>❖ Operational funding<br>❖ Project assessments | Climate mitigation |
| 4 | Establish Building Energy Efficiency Operations and Maintenance Requirements | ❖ Capital Projects | ❖ Communications and Public Engagement<br>❖ Finance and Community Services<br>❖ Sustainability | Medium: 3-5 years | $$$$ | ❖ Staff capacity<br>❖ Staff training<br>❖ Operational funding | Climate mitigation |
| 5 | Incorporate Equity and Sustainability into Processes to Address Aging Infrastructure | ❖ Capital Projects<br>❖ Equity and Inclusion<br>❖ Public Works | ❖ Communication and Public Engagement<br>❖ Parks and Recreation<br>❖ Sustainability | Short: 0-2 years | $ | ❖ None identified | Climate mitigation |
| 6 | Update City-Owned Building Standards for Resilience Considerations | ❖ Capital Projects<br>❖ Development Services<br>❖ Planning and Urban Design | ❖ Finance and Management Services<br>❖ Fire<br>❖ Sustainability | Short: 0-2 years | $ - $$$$ | ❖ Capital funding | Climate adaptation |

## TABLE 3: SUMMARY OF SUSTAINABILITY AND CLIMATE ACTIVITIES

| ID | Activity | Lead Implementers | Supporting Departments | Implementation Timeframe | Funding | Resource Gap | Activity Type |
|----|----------|-------------------|------------------------|--------------------------|---------|--------------|---------------|
| 7 | Establish a Policy for the Purchase, Sale, or Adaptive Reuse of Highly Vulnerable or Underutilized Assets | ❖ Capital Projects<br>❖ Community and Economic Development<br>❖ Finance and Management Services<br>❖ Planning and Urban Design | ❖ Public Works<br>❖ Sustainability | Short: 0-2 years | $ | ❖ Assigned staff | Climate adaptation |
| 8 | Investigate and Install Building Automation for All City Facilities | ❖ Capital Projects<br>❖ Information Technology Services | ❖ Community and Regional Entertainment Facilities<br>❖ Sustainability | Medium: 3-5 years | $ - $$$$ | ❖ Capital funding<br>❖ Operational funding | Climate adaptation<br><br>Climate mitigation |
| 9 | Integrate Climate Justice, Equity, and Resilience Best Practices into Emergency Response Plans and Operations | ❖ Fire<br>❖ Sustainability | ❖ Communications and Public Engagement<br>❖ Equity and Inclusion | Short: 0-2 years | $ | ❖ None identified | Climate adaptation<br><br>Climate mitigation |
| 10 | Enhance Stormwater Control Measures for City-Owned Property | ❖ Capital Projects<br>❖ Public Works | ❖ Development Services<br>❖ Parks and Recreation<br>❖ Planning and Urban Design<br>❖ Sustainability<br>❖ Transportation | Short: 0-2 years | $$$$ | ❖ Staff Capacity<br>❖ Capital funding<br>❖ Operational funding | Climate adaptation |
| 11 | Assess and Enhance Efficiency and Resilience of Municipal Water Distribution System | ❖ Water Resources | ❖ Sustainability | Short: 0-2 years | $$ - $$$$ | ❖ None identified | Climate adaptation<br><br>Climate mitigation |
| 12 | Utilize Green Fleet Policy for Fleet Electrification | ❖ Public Works (Fleet Services) | ❖ Capital Projects<br>❖ Finance and Management Services<br>❖ Sustainability | Short: 0-2 years | $ - $$$$ | ❖ Capital funding<br>❖ Operational funding | Climate mitigation |
| 13 | Conduct Low-Carbon Transit Assessment | ❖ Transportation | ❖ Capital Projects<br>❖ Communication and Public Engagement<br>❖ Finance and Management Services (Purchasing and Contracting)<br>❖ Sustainability | Medium: 3-5 years | $ - $$$$ | ❖ Capital funding<br>❖ Operational funding<br>❖ Access to reliable vehicles meeting operational needs | Climate mitigation |

**TABLE 3: SUMMARY OF SUSTAINABILITY AND CLIMATE ACTIVITIES**

| ID | Activity | Lead Implementers | Supporting Departments | Implementation Timeframe | Funding | Resource Gap | Activity Type |
|---|---|---|---|---|---|---|---|
| 14 | Use Climate Justice and Sustainability Tools for Planning and Decision Making | ❖ Equity and Inclusion<br>❖ Sustainability | ❖ All departments and divisions | Ongoing | $ | ❖ None identified | Climate adaptation |
| 15 | Monitor and Engage in State-Level and Utility Policies on Climate and Sustainability | ❖ Sustainability | ❖ Legal | Ongoing | $ | ❖ None identified | Climate adaptation<br>Climate mitigation |
| 16 | Establish Sustainable Oriented Procurement Procedures | ❖ Finance and Management Services<br>❖ Sustainability | ❖ All departments and divisions | Long: 6+ years | $ | ❖ Staff capacity | N/A |
| 17 | Conduct Solid Waste Master Planning Process | ❖ Public Works (Sanitation Division) | ❖ Sustainability | Short: 0-2 years | $ - $$$$ | ❖ Staff capacity<br>❖ Operational funding | Climate mitigation |
| 18 | Utilize Urban Forestry Practices on City Land in Priority Neighborhoods to Reduce Heat Island Impacts and Sequester Carbon | ❖ Capital Projects<br>❖ Department of Development Services<br>❖ Public Works | ❖ Parks and Recreation<br>❖ Planning and Urban Design<br>❖ Sustainability | Short: 0-2 years | $$ | ❖ None identified | Climate adaptation |
| 19 | Explore City Supported Community Resilience Hub Sites | ❖ Communication and Public Engagement<br>❖ Parks and Recreation<br>❖ Sustainability | ❖ Capital Projects<br>❖ Fire | Medium: 3-5 years | $ - $$$$ | ❖ None identified | Climate adaptation |
| 20 | Conduct Programs for Food Production, Community Gardening and Edible Plantings on Public Lands | ❖ Sustainability | ❖ Communication and Public Engagement<br>❖ Parks and Recreation<br>❖ Planning and Urban Design | Ongoing | $ | ❖ None identified | Climate adaptation |
| 21 | Make Climate and Sustainability- Related Data and Progress Towards Goals Publicly Accessible | ❖ Finance and Management Services (Office of Data and Performance)<br>❖ Sustainability | ❖ Communication and Public Engagement<br>❖ Information Technology Services | Short: 0-2 years | $ | ❖ None identified | N/A |
| 22 | Create a Sustainability and Climate Ambassador Program to Regularly Engage Frontline Communities | ❖ Communication and Public Engagement<br>❖ Sustainability | ❖ Equity and Inclusion | Short: 0-2 years | $ | ❖ None identified | N/A |

## Appendix B: Other Potential Activities

1. **Perform Energy Audits for Facilities and Identify Opportunities for Beneficial Electrification**
   Conduct an energy audit on all buildings prior to developing scope of work for building system upgrades, bond-funded projects, or capital project requests. Assess energy usage overtime and determine feasibility and affordability of replacement with more energy efficient alternatives (e.g., high efficiency heat pumps, LED lighting, energy efficient appliances).

2. **Establish Water Efficiency Standard for all New Construction, Retrofits, and Upgrades**
   Establish a water efficiency standard requiring that fixtures such as faucets, showerheads, urinals, toilets, irrigation, or other water-related equipment installed during retrofits and upgrades or during new construction to meet established efficiency levels or certification standards, such as EPA's WaterSense.

3. **Establish Water Efficiency Maintenance and Operations Requirements**
   Establish water efficiency maintenance and operations requirements for facility staff to ensure that water flow, leaks, or other efficiency losses are continuously monitored, and equipment repaired if needed. Require installation of improved metering systems and leak detection programs.

4. **Perform Water Audits on City Facilities**
   Conduct a water audit on all buildings prior to developing scope of work for building system upgrades, bond-funded projects, or capital project requests. Assess water usage over time and determine feasibility and affordability of replacement with more efficient alternatives.

5. **Conduct a Microgrid Feasibility Study and Identify Battery Storage Solutions**
   Conduct a microgrid feasibility study to identify a microgrid pilot location at a City site that provides critical services. Identify battery storage options to store energy generated by Asheville renewable energy sources and increase energy resilience.

6. **Implement Landslide/Stabilization Strategies on City-owned Property and City-controlled Rights-of-way to Protect Roads, Bridges, and Other Facilities**
   Establish policies and procedures for landslide mitigation (e.g., drainage techniques, operational schedules, and best practices for pre and post storm preparation and response) in conjunction with the landslide risk areas map and have dedicated funding to identify slope stabilization solutions at specified locations to be used in areas vulnerable to landslide or erosion.

7. **Increase Deployment of Water Gauges, Flood Sensors, or Other Data Gathering Technology to Increase Data Availability Regarding Flooding and Stormwater Runoff**
   Increase deployment of water gauges, flood sensors, or other data gathering technology to increase data availability regarding flooding and stormwater runoff. Utilize information for decision making regarding stormwater infrastructure projects and land utilization.

8. **Incorporate Sustainability and Resilience related Content into Employee Training, Onboarding, and Engagement**
   Develop sustainability educational resources for a broad staff base in the form of a staff training agenda or online materials for staff to learn about City sustainability goals, sustainable behaviors, and sustainability resources. For staff that are interested in further learning, provide resources to obtain sustainability professional credentials.

9. **Expand Asheville Edibles Program Communication, Education, and Innovation**
   Deploy smart technology demonstrations (e.g., battery storage, solar art, solar canopies, solar seating, wi-fi kiosks) in Asheville Edibles spaces. Expand interpretive signage in community gardens focused on sustainability education topics (e.g., edibles, carbon sequestration, green stormwater infrastructure).
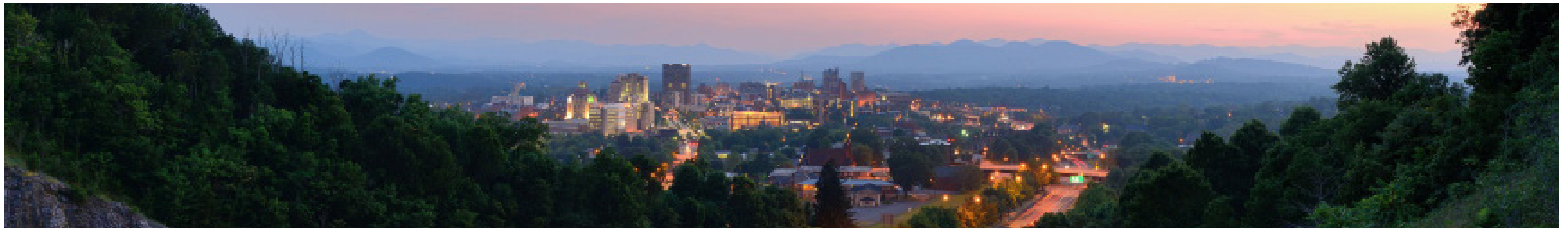
## Appendix C: City Council Adopted Sustainability and Climate Resolutions

| TABLE 4: COUNCIL ADOPTED SUSTAINABILITY AND CLIMATE RESOLUTIONS | |
|---|---|
| **Adopted Resolutions** | **Supporting Policies, Plans, Initiatives, and Documents** |
| Resolution 07-90 Establishing 2% Municipal Carbon Footprint Reduction Goal [25] | Sustainability Management Plan (SMP) [26] |
| Resolution 07-91 Adopting Leadership in Energy and Environmental Design (LEED) Standards [27] | |
| Resolution 11-77 Resolution to Increase the Municipal Carbon Footprint Reduction Goal to 4% Each Year for the Next Five Years [28] | |
| Resolution 13-17 Establishing the City of Asheville's Food Action Plan in Support of the Asheville Buncombe Food Policy Agenda [29] | |
| Resolution 14-27 Establishing a Waste Reduction Goal and Benchmarks for the City of Asheville [30] | |
| Resolution 17-257 Approving the City of Asheville's 2017 Food Policy Goals and Action Plan [31] | Asheville's Food Policy Action Plan [32] |
| Resolution 18-143 Adopting Living Asheville: A Comprehensive Plan for Our Future | Asheville Climate Resilience Assessment [33] |
| Resolution 18-279 Establishing a 100% Renewable Energy Goal for the City of Asheville [34] | 100% Renewable Energy Roadmap [35]  Sustainable Fleet Procurement Policy and Procedures |
| Resolution 20-25 Declaration of a Climate Emergency | Climate Justice Initiative [36] |

# Appendix D: List of Acronyms

| TABLE 5: ACRONYMS | |
|---|---|
| ART | Asheville Rides Transit |
| AHPC | All Hazards Planning Committee |
| BIPOC | Black, Indigenous, and People of Color |
| BMS | Building Management System |
| CIP | Capital Improvement Program |
| CO2 | Carbon Dioxide |
| CO2e | Carbon Dioxide Equivalent |
| CIS | Comprehensive Facilities Study |
| FEMA | Federal Emergency Management Agency |
| HUD | Department of Housing and Urban Development |
| HVAC | Heating, Ventilation, and Air Conditioning |
| HVI | Heat Vulnerability Index |
| IIJA | Infrastructure Investment and Jobs Act |
| IRA | Inflation Reduction Act |
| LEED | Leadership in Energy and Environmental Design |
| MCAP | Municipal Climate Action Plan |
| P3 | Public Private Partnership |
| PPA | Power Purchase Agreement |
| PV | Photovoltaic |
| REC | Renewable Energy Certificate |
| RFP | Request for Proposals |
| SACEE | Sustainability Advisory Committee on Energy and the Environment |
| SMP | Sustainability Management Plan |
| SOP | Standard Operating Procedure |



*Skyline of Downtown Asheville - By Derek Olson Photography*

# Appendix E: MCAP Framework and High Priority Activities



## GOALS

The City of Asheville's three goals are represented with colour and icons in the project logo.

## FOCUS AREAS

Each individual goal has defined focus areas identified by the number of colored circles in the project logo.

## ACTIVITIES (1-22)

Within each goal and focus area are a list of 22 detailed activities.

# Goal 1

## City-Owned Assets are Resilient, Sustainable, and Efficients

**Focus Area 1.1: Use 100% Renewable Energy For City-Owned Facilities and Enhance Energy Efficiency For City-Owned Facilities**

1. Continue Installation of Renewable Energy Resources on Municipal Property
2. Utilize Alternatives to On-Site Solar to Meet Targets
3. Expand Energy Efficiency Standards for All New Construction to Retrofits and Upgrades
4. Establish Building Energy Efficiency Operations and Maintenance Requirements

**Focus Area 1.2: Equip City Assets To Prevent, Withstand, and Recover From Disruptions**

5. Incorporate Equity and Sustainability into Processes to Address Aging Infrastructure
6. Update City-owned Building Standards for Resilience Considerations
7. Establish a Policy for the Purchase, Sale, or Adaptive Reuse of Highly Vulnerable or Underutilized Assets
8. Investigate and Install Building Automation for All City Facilities
9. Integrate Climate Justice, Equity, and Resilience Best Practices into All Hazards Planning Committee and Emergency Response Plans and Operations
10. Enhance Stormwater Control Measures for City-owned Property
11. Assess and Enhance Efficiency and Resilience of Municipal Water Distribution System
12. Focus Area 1.3: Decarbonize Fleet Vehicles and Fleet Operations
13. Utilize Green Fleet Policy for Fleet Electrification
14. Conduct Low-Carbon Transit Assessment

# Goal 2

## Sustainability and Climate Priorities are Embedded In City Operations, Participation, and Decision Making

**Focus Area 2.1: Embed Sustainability, Resilience, and Equity In Decision-Making and Planning**

15. Use Climate Justice and Sustainability Tools for Planning and Decision Making
16. Monitor and Engage in State-Level and Utility Policies on Climate and Sustainability
17. Establish Sustainable Oriented Procurement Procedures

**Focus Area 2.2: Identify Opportunities To Reduce Waste Generation and Improve Diversion**

18. Conduct Solid Waste Master Planning Process

# Goal 3

## The City Supports Sustainability and Resilience For Area Residents and Businesses

**Focus Area 3.1: Collaborate On and Support Community-Based Solutions and Infrastructure Improvements To Prevent, Withstand, and Recover From Disruptions**

19. Utilize Urban Forestry Practices on City Land in Priority Neighborhoods to Reduce Heat Island Impacts and Sequester Carbon
20. Explore City Supported Community Resilience Hub Sites
21. Conduct Programs for Food Production, Community Gardening, and Edible Plantings on Public Lands

**Focus Area 3.2: Facilitate Inclusive Sustainability, Climate, and Resilience Communications, Education, and Outreach**

22. Make Climate and Sustainability-related Data and Progress Towards Goals Publicly Accessible
23. Create a Sustainability and Climate Ambassador Program to Regularly Engage Frontline Communities

# Appendix F: Endnotes

1  National Research Council. 2011. Sustainability and the U.S. EPA. Washington, DC: The National Academies Press. https://nap.nationalacademies.org/catalog/13152/sustainability-and-the-us-epa

2  Information regarding the program, including eligibility requirements and costs, can be found at https://www.duke-energy.com/business/products/renewables/green-source-advantage

3  As of November 1, 2022, the program had 150 MW available for large, non-residential customers.

4  https://www.ncosfm.gov/codes/codes-current-and-past

5  ANSI/ASHRAE/IES Standard 90.1-2016, Energy Standard for Buildings Except Low-Rise Residential Buildings

6  https://www.energycodes.gov/sites/default/files/2021-07/EED_1365_BROCH_StateEnergyCodes_states_NORTH_CAROLINA.pdf

7  https://www.energystar.gov/buildings/benchmark

8  https://avl.maps.arcgis.com/apps/instant/lookup/index.html?appid=10e2c4ae45614b92ad4efaa61342b249

9  The City's Climate Resilience Assessment is a planning document which takes into account climate-related impacts to the City, how these threats are expected to change in the future, the current resiliency posture of the City and its assets, and how the City can best prepare and respond to these threats through strategic and prioritized actions to be implemented in the most at-risk areas. The assessment was an iterative process with several phases from 2016 to 2018. The project included a broad project team of City staff representing 14 departments as well as external stakeholders and subject-matter experts.

10 Especially for resilience considerations pertaining to Asheville's primary climate threats of flooding, landslides, wildfire, extreme heat, and drought.

11 https://www.nibs.org/projects/natural-hazard-mitigation-saves-2019-report

12 For example, to receive Federal Emergency Management Agency (FEMA) funding for emergency shelters, the shelters must adhere to FEMA's prescribed construction standards. These standards are designed to ensure that the shelters function appropriately before and after the event for which they are designed. By adopting the FEMA standards, the City can ensure that future shelters will be designed with appropriate resilience features and that existing shelters will become more resilient as they are remodeled or receive major repairs.

13 https://files.hudexchange.info/resources/documents/Resilient-Building-Codes-Toolkit.pdf

14 Buildings/facilities vulnerable to flooding and landslides identified in the Resilience Assessment

15 https://news.mit.edu/2013/reducing-wasted-energy-in-commercial-buildings

16 https://avl.maps.arcgis.com/apps/instant/lookup/index.html?appid=10e2c4ae45614b92ad4efaa61342b249

17 https://drive.google.com/file/d/1X_Gr4eUCmkXPOzAcvyxCe-uZPkX84Byz/view

18 https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2020

19 https://drive.google.com/file/d/1ahyEXbdZPWVkyVoMamjXM-2Lt00E2pgW/view

20 J.Nelson, LBrooks (2015) Racial Equity Toolkit, An opportunity to Operationalize Equity. Local and Regional Governmental Alliance on Race & Equity. https://racialequityalliance.org/wp-content/uploads/2015/10/GARE-Racial_Equity_Toolkit.pdf

21 https://docs.google.com/document/d/1Somflt6A6op40xbNLEOa04pNQHNybDfHWPLmNonSW-o/edit

22 https://drive.google.com/file/d/1xyFlfWXMnqK1W0s53SCn6ebVAt06DIo0/view

23 Asheville, NC Code of Ordinances, Article XIX, Section 7-19-5

24 https://drive.google.com/file/d/1B3LKI-oCJ35nyUSnz_c7YS98gujwDa_y/view

25 https://drive.google.com/file/d/198szdiNjpVb2LIMGjoGwmwFhh73pcd1-/view

26 https://drive.google.com/file/d/1GzyhapFEMXfcHJ5BBaGEy3V_GJkY1hVo/view

27 https://drive.google.com/file/d/1IEmIm0_YuOoglGYvjRub-UGNTc0KW7yE/view?usp=sharing

28 https://drive.google.com/file/d/1xQOSOFTovY7cFlXep6CBYrBVFYofZ5h6/view

29 https://drive.google.com/file/d/1xGKqVDm0up86jmCOSQs1JulIJbbNzsWY/view

30 https://drive.google.com/file/d/1AShd8mjtSOD6WuUYp0qhAiBwWlLoZ6yM/view

31 https://drive.google.com/file/d/10fRZX4C7cKo3osLWoPAI1Nsp3OP0RNVT/view

32 https://drive.google.com/file/d/10fRZX4C7cKo3osLWoPAI1Nsp3OP0RNVT/view

33 https://drive.google.com/file/d/1X_Gr4eUCmkXPOzAcvyxCe-uZPkX84Byz/view

34 https://drive.google.com/file/d/0B5AwbIdPA9m_WHVqX2VIRzdNNmpsRjZhekUwZ0xQcWVubEpF/view?resourcekey=0-T4yEW9EMDbcXXUQpWuxYHA

35 https://drive.google.com/file/d/0BzZzONRPV-VAQTNxU2pVSEJPZTBPZ053Vk52dzk2S2tIWFNz/view?resourcekey=0-tvjErVdjt_0OwFROXHIggQ

36 https://www.ashevillenc.gov/department/sustainability/climate-initiatives/climate-justice-initiative/